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ABSTRACT

The directory provides reviews of 50 software programs approved for educational use in Alberta (Canada) schools. Each program was reviewed by two teachers with the purpose of determining the specific populations of special needs students (including the gifted) that the programs would be suitable for and the approximate grade level with which the program should be used. No attempt was made to determine the relative effectiveness of the programs as an instructional resource for special needs students. Programs are provided in the areas of business education, computer literacy, early childhood, keyboarding, language arts, mathematics, problem solving, and science. Programs are listed alphabetically by title and indexed by broad subject. Provided for each program is information on subject, topic(s), author, publisher, cost, components, system requirements, and other formats. Also provided is an evaluative summary of the program and consideration of special education applications. (DB)

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COMPUTER COURSEWARE FOR SPECIAL EDUCATION

Volume 1

January 1989

EC 221824

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Alberta. Alberta Education Response Centre.
Computer Courseware for Special Education. Volume I.

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1. Computer programs. 2. Deaf - Education - Alberta - Computer programs.
3. Handicapped children - Education - Alberta - Computer programs.

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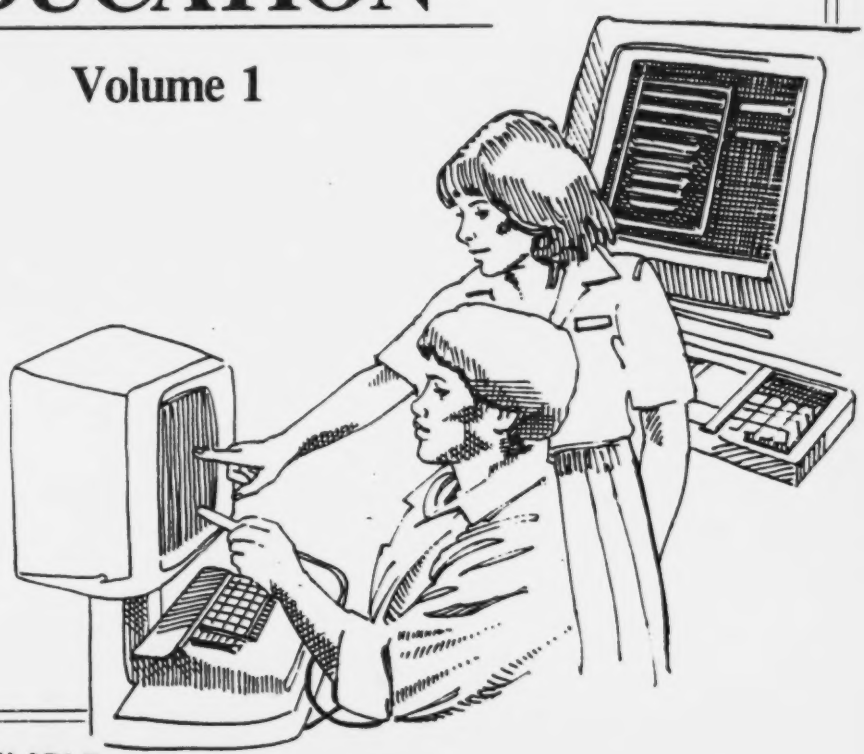
COMPUTER COURSEWARE FOR SPECIAL EDUCATION

Volume 1



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PREFACE

Alberta Education has approved the use of various software programs for educational use in Alberta schools. This software has been subjected to an intensive evaluation process to determine its suitability as an instructional resource. However, this software has not been subjected to an evaluation to determine its effectiveness as an educational resource for special needs students.

In response to many inquiries from teachers and parents regarding the availability and appropriateness of computer software for special needs students, it was decided that the Alberta Education Response Centre, in collaboration with Curriculum Support Branch, Alberta Education, would launch a series of reviews of software for special needs students. In order to narrow the field for the initial review, only software which had been approved by Alberta Education was selected. It must be stressed that these programs were reviewed to determine their suitability for use with special needs students. No attempt was made to evaluate the programs to determine the relative effectiveness of the programs as an instructional resource to special needs students.

In order to expedite the review of these materials, a group of teachers from various school jurisdictions was brought together in February 1988 to receive training in evaluation of computer software. Using an adapted version of Alberta Education's software evaluation form, the group reviewed 52 previously approved software programs. Each program was reviewed by two teachers, the results of which were synthesized by Alberta Education personnel.

The teachers were requested to review the programs with the purpose of determining the specific populations of special needs students that the programs would be most suitable for and the approximate grade level to which the program should be directed. In most instances the programs were determined to be appropriate for more than one category of exceptionality and suitable for a range of grade levels.

It is anticipated that this is the first of a series of documents devoted to the review of software programs for special needs students. We welcome your recommendations for future editions.

INDEX

subject	*title*	*exceptionality*	*grade*
BUSINESS EDUCATION	Appleworks	GT	4+
		LD	4+
		EMH	7+
		IOP	Jr./Sr. High
	The Whatsit Corporation	GT	8-10
		IOP	10-12
COMPUTER LITERACY	Mastertype	GT	3-7
		LD	4-9
	Spectrum	GT	5-9
	Superkey	GT	3-6
		LD	5-9
		IOP	Jr./Sr. High
EARLY CHILDHOOD	Bumble Games	LD	2-6
		EMH	1-6
		HI	1-4
		Enrichment	1-3
	Early Games for Young Children	LD EMH TMH	1-2
	Number Farm	GT	K
		LD EMH TMH	
	Stickybear Numbers	Not suggested for use with special needs students	
	Stickybear Opposites	-	K-2
		LD EMH TMH	
		Speech and Language Impaired	
		Minimally VI	
	Stickybear Shapes	GT	Preschool-K
		LD	1
		EMH	1-2
KEYBOARDING	Mastertype	GT	3-7
		LD	4-9
	Superkey	GT	3-6
		LD	5-9
		IOP	Jr./Sr. High
LANGUAGE ARTS	Glaze Plus Levels C-F	LD	6-9

EMH - Educable Mentally Handicapped • GT - Gifted and Talented • HI - Hearing Impaired • IOP - Integrated Occupational Program
LD - Learning Disabled • TMH - Trainable Mentally Handicapped • VI - Visually Impaired

subject	*title*	*exceptionality*	*grade*
LANGUAGE ARTS (continued)	Easy as ABC	LD EMH TMH VI	1-3 K-2
	Fay: The Word Hunter	LD GT	4-7 3-6
	Fay's Word Rally	LD EMH TMH	1-6; 5-7 2-6 limited use
	The Hinky Pinky Game	GT LD IOP	3-7 4-7 Jr./Sr. High
	Magic Spells	LD EMH GT	2-6 2-9 2-6
	MI-SS-NG L-NKS: Classics, Old & New	GT LD	4-7 6-9
	MI-SS-NG L-NKS: Microencyclopedia	GT	4-7
	MI-SS-NG L-NKS: Young People's Literature	GT LD	3-6 5-9
	Rabbit Reader	LD TMH EMH VI	1-3
	Spell It!	GT LD EMH	3-7 reading level 4+
	Stickybear Opposites	- LD EMH Speech and Language Impaired Minimally VI	K-2
	Superkey	GT LD IOP	3-6 5-9 Jr./Sr. High
	Word Attack	GT LD EMH	3-8
LANGUAGE ARTS WORD PROCESSING	Appleworks	GT LD EMH IOP	4+ 4+ 7+ Jr./Sr. High

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subject	*title*	*exceptionality*	*grade*
LANGUAGE ARTS word processing (continued)	Bank Street Writer Bank Street Writer (64K/120K) Bank Street Writer III	GT EMH Minimally VI	4-8 4-9
	Magic Slate	LD EMH VI GT	4+ 2+ 1+
	Milliken Word Processor	GT LD EMH	3-8 4-9
	The Newsroom	GT LD EMH	3-9 5-9 5-12
MATHEMATICS	Academic Skill Builders in Mathematics	LD EMH	2-7
	Bumble Games	LD EMH HI Enrichment	2-6 1-6 1-4 1-3
	Bumble Plot	LD HI Enrichment	3-7 3-6 3-5
	Carrying: Regrouping for Addition	LD	3+
	Code Quest	GT LD	4-7 5-8
	Count and Add	LD EMH TMH	Primary
	Explorer Metros	GT LD	3-6 5-7
	The Factory	GT LD IOP	3-7 4-9 Jr. High
	Fay: That Math Woman	LD EMH TMH GT	2-4 3-5 K-2
	Fraction Factory	LD EMH	4-7
	The King's Rule	GT LD EMH	3-7 5-9

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subject	*title*	*exceptionality*	*grade*
MATHEMATICS (continued)	Math Blaster	LD EMH Minimally VI	4-9
	Number Farm	GT LD EMH TMH	K
	Match Activities Courseware (MAC)	GT LD EMH	1-7 2-9 1-9
	A Piece of Cake	LD	Very limited use
	Stickybear Math I	GT LD EMH TMH	1-4 1-5
	Stickybear Numbers	Not suggested for use with special needs students	
	Stickybear Shapes	GT LD EMH	Preschool - K 1 1-2
	The Super Factory	GT LD	5-9 7-9
	The Whatsit Corporation	GT IOP	8-10 10-12
PROBLEM SOLVING	Bumble Games	LD EMH HI Enrichment	2-6 1-6 1-4 1-3
	Bumble Plot	LD HI Enrichment	3-7 3-6 3-5
	Code Quest	GT LD	4-7 5-8
	The Factory	GT LD IOP	3-7 4-9 Jr. High
	Gertrude's Puzzles	LD EMH GT	age 8-10 age 10-13 age 6-8
	The King's Rule	GT LD EMH	3-7 5-9

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subject	*title*	*exceptionality*	*grade*
PROBLEM SOLVING (continued)	Moptown Hotel	GT	1-3
		LD	2-5
		EMH	1-5
	Moptown Parade	LD	1-3
		EMH	1-5
		GT	K-2
	Rocky's Boots	GT	4-9
		LD	5-8
	Safari Search	GT	3-8
		LD EMH	3-9
	Spectrum	GT	5-9
	The Super Factory	GT	5-9
		LD	7-9
	Teddy's Playground	LD	2-4
		EMH	2-5
	Tonk in the Land of Buddy-Bots	GT	K-3
		LD	2-4
	The Whatsit Corporation	GT	8-10
		IOP	10-12
SCIENCE	Explorer Metros	GT	3-6
		LD	5-7

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ACADEMIC SKILL BUILDERS IN MATHEMATICS (1982)

Subject	Mathematics
Topic	Addition, subtraction, multiplication and division of whole numbers 0-9
Users	LD and EMH grades 2-7 (If the program is available, purchase is not recommended.)
Author	None Cited
Publisher	Developmental Learning Materials P.O. Box 4000, One DLM Park, Allen, TX 75003 Telephone: (214) 248-6300
Cost	$46.00 U.S. (1988)
Components	Each title has 1 disk, teacher's guide (20p), 53 flashcards, 12 blackline masters
System Requirements	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, colour monitor preferred, game paddles (optional)
Other Formats	PC/PCjr, Commodore 64, Tandy 1000

PROGRAM SUMMARY

This series includes six separate programs: ALIEN ADDITION (addition), MINUS MISSION (subtraction), METEOR MULTIPLICATION (multiplication), DEMOLITION DIVISION (division), ALLIGATOR MIX (addition and subtraction) and DRAGON MIX (multiplication and division).

The programs are intended to assist students to learn basic mathematics facts through fast recall and fast motor responses. An arcade game format is used where problems appear and the student manipulates the keyboard or game paddles to enter or signify the correct answer. There are nine levels that a student can work through.

In each disk the teacher may control the content range (digits 0 - 3 , 0 - 6, or 0 - 9), the time limit to answer questions (1 - 9 seconds), and the length of the drill (1 - 5 minutes). The subtraction range is limited since it does not include double digits.

Negative feedback is poor, even the correct answer is not given. The speed necessary to run the game format does not allow extra attention to incorrect answers. There is no provision for reviewing incorrect answers and students may practice facts that they already know, but will not learn the facts in which they are weak. Success in the games is very dependent upon the manual dexterity of the student in manipulating the keys or game paddles. The arcade format has a somewhat violent theme in that tanks are destroyed by guns, aliens are shot down by a cannon, a city is protected by fire, and atomic clouds are present.

Colour, sound and graphics are used effectively and are motivating. It is unfortunate that sound cannot be disabled. Please note that the cost of each of the six programs in this series is $46.00 U.S.

SPECIAL EDUCATION APPLICATION

While the game format may be motivating and interesting, this program is not suggested as an appropriate purchase for special needs students. The emphasis on speed, required good manual dexterity, high cost, lack of an instructional component and no assistance in the negative feedback do not make this a good choice.

However, if the program is available in your school the curriculum content covered in ALIEN ADDITION, MINUS MISSION and ALLIGATOR MIX would be suitable for learning disabled and/or educable mentally handicapped students in grades 2 - 6 if they have good manual dexterity. METEOR MULTIPLICATION, DEMOLITION DIVISION and DRAGON MIX could be used with LD and EMH students in grade 4 and up.

APPLEWORKS (2.0)

Subject	Business Education, Language Arts
Topic	Word processor, data base management, spreadsheet
Users	Gifted grades 4+, LD grades 4+, EMH grades 7+, IOP Junior/Senior High
Author	Robert Lissner
Publisher	Apple Computer Company 20525 Mariani Avenue Cupertino, California 95014 Telephone: (408) 996-1010
Cost	LRDC Buyer's Guide
Components	3 disks (Apple presents Applewords, sample files, start-up/program disk), reference manual, tutorial
System Requirement	Apple IIe/IIc/IIgs, 64K (128 preferred), 1 disk drive (2 preferred), monitor, 80-column card (for IIe) only, printer
Other Format	Available only in Apple format

PROGRAM SUMMARY

APPLEWORKS is an integrated utility program consisting of a word processor, data base, spreadsheet, and mail merge functions. This program offers a comprehensive range of editing capabilities and the use of menus makes document creation easy and straight forward. On screen help and prompts are excellent and provide effective guidance for the beginning word processing student. Text can be inserted and deleted easily. The move and copy functions are efficient. Commands are mnemonic but are not displayed on the screen until appropriate keys are pressed. Some beginning students may have difficulty remembering these. A card with the key commands could be prepared and put by the computer for easy access. Files can be easily and quickly saved to the disk.

Excellent integration between the word processor, data base and spreadsheet is provided. Data can be entered into each and stored on a data disk, retrieved and modified as needed. As well, data from the spreadsheet and data base can be transferred into the word processor, saved and printed as required. Using the mail merge function, data from the data base can be entered into a specially formatted word processor document and printed out as form letters. This program offers a good range of print formatting functions. APPLEWORKS provides two demonstration disks and a tutorial disk, along with a reference manual and tutorial manual. The tutorial disk, which is about a grade 6 reading level, guides the student through various functions of the program with written descriptions and simulated exercises. A comprehensive manual is included to provide all the technical information necessary to make effective use of the program for beginners as well as advanced users. A teacher must be prepared to direct hands-on experience for initial users. Once the student has used the program for a while, little assistance should be required.

SPECIAL EDUCATION APPLICATION

APPLEWORKS may be used with a wide variety of students since it is basically a tool. The effective use depends to a great extent on how the teacher plans to use this program.

The word processor can be used effectively in the writing process with gifted and talented students from grade 4 up in writing of poetry, short stories, reports, letters, newspaper articles, etc. The data base and spreadsheet may also be used with gifted students in grades 6 and junior high school in mathematics, science and social studies. These applications will need to be planned by the teacher since no assistance is provided in the documentation.

Learning disabled students in the upper elementary grades and educable mentally handicapped students in junior and senior high school could also make good use of the word processing in writing activities provided the teacher takes the time to introduce the program carefully and plans appropriate activities for using this tool. Students in the Integrated Occupational Program (I.O.P.) in junior and senior high school could also make good use of the word processor in language arts. The fact that a nice neat copy is printed is a boom to those students with very poor handwriting skills. The data base and spreadsheet could also be used with this target audience.

APPLEWORKS is also a valuable tool for teachers to maintain extensive records and use the spreadsheet for individual educational profiles for special needs students. The word processor can be an asset in the preparation of written assignments and reports.

BANK STREET WRITER (64K/120K Version) (1984)

Subject	Language Arts
Topic	Word Processing
Users	Gifted grades 4-8, IOP Junior High, LD and EMH grades 4-9
Author	Intentional Educations Inc., Franklin E. Smith and Bank Street College
Publisher	Scholastic Inc. 123 Newkirk Road Richmond Hill, Ontario L4C 3G5 Telephone: 1-800-268-3860
Cost	$106.15 (1987) LRDC
Components	3 disks (2 originals, 1 backup), reference manual (104p)
System Requirements	Apple IIe/IIc/IIgs, 64 or 128K, 1 disc drive, monitor, printer recommended
Other Formats	IBM PC/PCjr, Commodore 64

PROGRAM SUMMARY

BANK STREET WRITER is a word processing package which offers three modes of operation: Write, Edit and Transfer. Documents are easily created and corrected via the Write screen with the commands displayed at the top of the screen. The screen displays a 40-column card. The find/replace feature works in forward search only and is not global in nature: each case must be individually reviewed. The deletion process is somewhat time consuming since deletions are done by character rather than by word, line, sentence or paragraph.

Documents can be stored and merged easily. The printer format provides only the basic necessities. The limitations in margin settings, lack of justification, inability to accommodate super/subscripts, inability to hyphenate or disable word wrap combine to limit this program to basic word processing operations only. However, this product is very appropriate for elementary students and as an introduction to junior high school students.

The documentation is easy to read and follow. The student activities provide good sample exercises for learning this word processing program. The tutorial program provided on the disk gives an excellent brief introduction to the operation of the program thus enabling the students to learn to use the program independently and be able to produce documents in a short time.

If you do not have a copy of BANK STREET WRITER in your school and you are considering purchasing a copy, please note the report on the new version, BANK STREET III. It appears to be a much superior product.

SPECIAL EDUCATION APPLICATION

BANK STREET WRITER provides a very good tool to be used in the writing process. This program is appropriate for gifted and talented students in grades 3 to 8. It provides an excellent medium for the students to create letters, reports (in various subject areas), stories, plays, poetry, etc. The opportunity for group work for brainstorming and pre-planning can be arranged by the teacher to provide excellent opportunities for collaborative learning prior to actual writing. This program can provide the vehicle for writing and revising. Sharing with peers can follow with printed copies being available. Consideration must be given to keyboarding skills if the writing process using a word processor is to be implemented effectively. It is important that the student's flow of thoughts not be hampered by inability to input them.

This program can be used effectively with learning disabled students and educable mentally handicapped from grades 4 to 9. The use of small groups for brainstorming and pre-writing sessions can be very useful for those students requiring practice in expressive skills and for those students who have difficulty generating ideas for stories, letters, reports, etc. The use of the word processor instead of the usual handwritten format can be a very positive and motivating experience for students with poor penmanship skills. The neatly printed final product can help to build self-esteem and confidence which seems to be lacking in so many learning disabled students.

This program is also appropriate for use with junior high school students in the Integrated Occupational Program (IOP).

BANK STREET WRITER III (1986)

Subject	Language Arts
Topic	Word Processing
Users	Gifted grades 3-9, IOP Junior High, LD and EMH grades 4-9, Minimally visually handicapped (20-column)
Author	Bank Street College of Education
Publisher	Scholastic Inc. 123 Newkirk Road Richmond Hill, Ontario L4C 3G5 Telephone: 1-800-268-3860
Cost	$109.95.15 (1987)
Components	2 program disks with backups, 1 dictionary disk with backup, teacher's manual (223p)
System Requirements	Apple IIe/IIc/IIgs, 128K, 1 disk drive, monitor, printer, mouse optional
Other Formats	IBM PC/XT/AT/PCjr, Commodore 64

PROGRAM SUMMARY

BANK STREET WRITER III is an enhanced version of earlier Bank Street Writer versions and contains all the features most teachers and students require in elementary and junior high school. It offers three word processing formats: a 20-column version designed for younger and special needs students; a 40-column and an 80-column version, both having access to the full range of word processing features.

BANK STREET III has many features which make it a valuable word processing tool. It is very easy to use; has an excellent hands-on disk tutorial; includes 20/40/80-column versions; has a built-in calculator; includes a fully integrated spelling checker with 60,000 words; includes a Thesaurus with a 50,000word dictionary; allows interfacing with several other programs; has a "frozen text" feature which permits the teacher to add on-screen lessons and activities that a student can't erase; allows the teacher to create up to 20 macros or function keys that allow the student to perform an entire task with a single keystroke; and includes excellent and comprehensive documentation with good teaching suggestions. The expanded teacher utilities also include chain printing and print-to-disk and print-to-screen features. Additional words can be added to both the spell checker and the Thesaurus.

The 40 and 80-column versions require 128K while the 20-column requires only 64K. A separate 20-column version performs the basic operation of entering text, editing and printing in large or normal-sized text, but it does not include features such as the spelling checker, Thesaurus, mouse, frozen text and macros.

The major weaknesses in this product include the 15 line limit for block text moves, the lack of right justification, and printer setups which cannot be saved in the files.

SPECIAL EDUCATION APPLICATION

BANK STREET WRITER III provides an excellent tool to be used in the writing process. The fact that "frozen text" allows teachers to create on-screen lessons, quizzes or guided student writing adds flexibility to this program and is an important asset for use with special needs students.

The program is excellent for gifted and talented students in grades 3 to 9. It provides an excellent tool for the students to create and revise letters and prepare reports in various subject areas, and produce stories, plays, poetry, etc. in creative writing. Group work for brainstorming, pre-writing activities, and sharing finished products with peers provides excellent opportunities for collaborative learning. Consideration must be given to keyboarding skills if the writing process using a word processor is to be implemented effectively. It is important that the student's flow of thoughts not be hampered by inability to input them.

This program can be used effectively with learning disabled students and educable mentally handicapped from grades 4 to 9. The use of small groups for brainstorming and pre-writing sessions can be very useful for those students requiring practice in expressive skills and for those students who have difficulty generating ideas

for stories, letters, reports, etc. The use of the word processor instead of the usual handwritten format can be a very positive and motivating experience for students with poor penmanship skills. The neatly printed final product can help to build self-esteem and confidence. The creation of "macros" in which one or two keystrokes are used to do the work of several can be an important addition for educable mentally handicapped.

The 20-column version can be used with visually handicapped students in the lower grades, however, only basic creating, editing and printing is available.

This program can also be used effectively with junior high school students in the Integrated Occupational Program (I.O.P.).

Note: This product was reviewed and evaluated for the regular class but has not been authorized to date.

BUMBLE GAMES (1982)

Subject	Mathematics, Problem Solving, Early Childhood
Topic	Plotting number pairs, using number positions in an array and points on a grid
Users	LD grades 2-6, EMH grades 1-6, Hearing Impaired grades 1-4, Enrichment grades 1-3
Author	Leslie Grimm, Teri Perl and Carol Dilfer
Publisher	The Learning Company c/o Addison-Wesley Box 580, 26 Prince Andrew Place Don Mills, Ontario M3C 2T8 Telephone: (416) 447-5101
Cost	$94.80 (1987)
Components	1 disk with backup, teacher guide (46p), black line master activity sheets
System Requirements	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, colour monitor, joystick (optional) IBM PC/PCjr, 128K, 1 disk drive, colour monitor, joystick (optional)
Other Formats	Atari, Commodore 64

PROGRAM SUMMARY

This product consists of six programs designed to introduce the use of number pairs to named positions in an array and to points on the grid.

1. FIND YOUR NUMBER - The student is introduced to the concept of a number line (1-5 parameters) and is asked to guess the location of a "special" number hidden on it.
2. FIND THE BUMBLE - A creature named "Bumble" hides in a random fashion on a 4 x 4 grid. The student is asked to find it by specifying coordinates.
3. BUTTERFLY HUNT - This program is similar to FIND THE BUMBLE, however, a 5 x 5 grid is provided.
4. VISIT FROM SPACE - Students pinpoint the location of a spaceship by specifying points on a grid.
5. TIC TAC TOC - Two students compete to line up four coordinate positions in a straight line either diagonally, horizontally or vertically. The program allows for more than one game and a tally is kept of the winners.
6. BUMBLE DOTS - This game displays a 10 x 10 grid and provides two options: the student can choose to name each coordinate position prompted by the computer and thus eventually disclose a join-the-dot computer drawn picture, or the student can input his/her own coordinates and the computer will join the dots. This allows the student to creatively "draw" a unique picture.

The tasks are sequenced from easy to difficult. Number lines, graphs and plotting are presented in an orderly manner by random questions posed in a game format. Graphics and colour are used effectively to provide a visual context for graphing and together with sound (optional) provide motivation and interest. The teacher documentation includes objectives for every game format as well as activity sheets to complement the games. Although the program states that the target audience is ages 4-10, the readability level for the instructions on the disk and the activity sheets is approximately grade 2.

SPECIAL EDUCATION APPLICATION

This program reinforces number lines, graphs and plotting effectively. The game format, the graphics, colour and sound are used effectively to provide a motivating and interesting learning experience for most of the target audience. This program would be appropriate for remediating specific weaknesses in graphing and plotting grids for learning disabled students in grades 2 to 6. It could also be used with EMH students who require a great deal of reinforcement. This program also has potential use for enrichment with gifted students in kindergarten to grade 3; however, a teacher or an aide would need to read the instructions and provide assistance for kindergarten and grade 1. since a grade 2 reading level is required for effective independent use. The younger students will find colour and graphics motivating and interesting; however, older ones may become tired after prolonged use.

This program does not allow the teacher to adapt the content or alter any part of the program.

BUMBLE PLOT (1982)

Subject	Mathematics, Problem Solving
Topic	Coordinate graphing, using positive and negative numbers to name points on a quadrant grid, plotting number pairs
Users	LD (mathematics) in grades 3-7, hearing impaired grades 3-6, enrichment for grades 3-5
Author	Leslie Grimm and Teri Perl
Publisher	The Learning Company c/o Addison-Wesley Box 580, 26 Prince Andrew Place Don Mills, Ontario M3C 2T8 Telephone: (416) 447-5101
Cost	$94.80 (1987)
Components	1 disk with backup, teacher guide (44p) black line master activity sheets
System Requirements	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, colour monitor preferred IBM PC/PCjr, 128K, 1 disk drive, colour monitor preferred
Other Formats	Atari, Commodore 64

PROGRAM SUMMARY

This program is designed to build a student's plotting and graphing skills. The disk contains five programs which are developed sequentially:

1. TRAP AND GUESS - The student attempts to "trap" a secret number by identifying paired limits (between -3 and +3) on a number line displayed either horizontally or vertically. When the number is "trapped" successfully by entering a number on either side of it, the student then attempts to guess the actual secret number.
2. BUMBLEBUG - The student sets a trap to catch Bumblebug by choosing grid locations.
3. HIDDEN TREASURE - Students attempt to find underwater treasures on a -5 to +5 quandrant grid by naming coordinate positions. Arrows and written clues are used to aid in the search.
4. BUMBLE ART - Using a 10 x 10 grid, BUMBLE ART provides two options: (1) "Bumble Pictures" allows students to reconstruct one of seven pre-programmed pictures by entering coordinates on the grid; (2) "Make Your Own Picture" allows t he student to "draw" his/her own picture by entering coordinates of his/her choice.
5. ROADBLOCK - Students move roadblocks on a -5 to +5 quandrant in the attempt to prevent a bank robber from escaping. An optional 500 second timer adds challenge to this program.

This disk uses a game format to complement and expand the graphing skills taught in BUMBLE GAMES. The sequential development in the instructional format and effective student interaction are strengths. Graphics and colour are used effectively to provide a visual context for graphing and together with sound (optional) the game format combine to provide interesting and challenging games. The readability is at least a grade 3 level. The teacher documentation in the educational version provides information on using computers, complete descriptions of the programs and many useful on-line and off-line activities.

SPECIAL EDUCATION APPLICATION

This program reinforces the concept of graphing and the use of coordinates involving positive and negative numbers. The game format, the graphics, colour and sound are used effectively to provide a motivating and interesting learning experience for most of the target audience. Student interaction is good and the feedback appropriate. This program is suitable for learning disabled students in grades 4-7 for remediating weaknesses in graphics and plotting skills involving four quadrants. ROADBLOCK provides an excellent opportunity for developing problem solving skills in plotting and graphing and may be used for enrichment with students in grades 3 to 5. This program may also be used by hearing impaired students since sound is an option and not an essential part of the program.

This program does not allow the teacher to adapt the content or alter any part of the program.

CARRYING: REGROUPING FOR ADDITION (1985)

Subject	Mathematics
Topic	Understanding the concept of carrying
Users	LD grades 3+
Author	Dr. Charles Reigeluth et al
Publisher	Renaissance Learning Systems 701 Hamilton Parkway Syracuse, NY 13214 Telephone: (315) 445-2508
Cost	$69.95 U.S. (1987)
Components	Tutorial disk, 1 speed game disk, 1 start-up disk, teacher's guide (19p), symbols chart
System Requirements	Apple II+/IIe/IIc/IIgs, 64K, 1 disk drive, colour monitor preferred, printer (optional)
Other Formats	Available only in Apple format

PROGRAM SUMMARY

This program is designed to give the student a conceptual understanding of the process of carrying in the addition of two-digit numbers and to automatize the process. The program is composed of four sections which are covered on three disks:

1. An optional tutorial contains about nine pages of instruction and demonstrations on carrying. The user may repeat the entire section or certain parts if desired.
2. The practice exercises consist of groups of ten addition questions dealing with two-digit numbers. The user must correctly answer at least eight of ten in order to advance to the speed drills. The student receives help and is returned to the demonstrations after three consecutive errors.
3. The third section (disk 2) consists of speed drills. Sets of ten questions dealing with the addition of two one and/or two-digit involving carrying are presented. The student is timed and receives a rank at the end of the drill. Times are recorded and the student is encouraged to improve the score. Nine different levels of difficulty are available with speed varying from one category to the next.
4. The fourth section (disk 3) contains a management system. It allows the teacher to enter the student name, where he/she is to start in the tutorial (or skip it), to enter/delete/view learner files, to change the speed of the challenge levels, to reset game times to zero, and to print the progress for one class or all the learners. It can hold up to 90 students in 6 classes and provides a password as security.

The tutorial is a very strong point in this program since it develops the concept from the concrete to the abstract. The reading level is about a grade 3 level. The availability of guided practice at the beginning followed by speed drills, the corrective feedback, and the branching are all strengths.

Graphics, colour and sound are used effectively. The colour coded numbers according the respective place values make the program easier to use and understand. The documentation is easy to follow and understand. The one card for user support material is a useful reminder and allows for a quick review of the symbols. The management system is easy to set up and use; however, the records only indicate the most recent score unless printouts are done for each sitting. There is no information regarding the type of error(s) made. A drawback of the program is that three disks need to be handled requiring teacher supervision especially at the initial stages of use. The teacher is not allowed to modify the content in this program.

SPECIAL EDUCATION APPLICATION

The good sequential development in this program from concrete to abstract and from easy to more difficult makes this program suitable for leaning disabled students in grade 3 and up. It is helpful in developing the concept of place value as well as the concept of carrying in addition. The visual demonstrations and the step by step tutorial are very good. However, some of the grade 3 students may find the reading too difficult in the tutorial. Perhaps this can be done as a demonstration by the teacher. This program provides ample untimed practice to begin with until a good level of proficiency is reached. Then the student may go on to the speed drills. Some of the slower students may not appreciate being called "slow pokes" in the feedback.

CLOZE PLUS LEVELS C-F (1983)

Subject	Language Arts
Topic	Developing comprehension skills, improving vocabulary
Users	LD grades 6-9; purchase not recommended
Publisher	Instructional/Communications Technology and Milliken Publishing Co. c/o BLM, P.O. Box 2249 175 Holiday Inn Drive Cambridge, Ontario N3C 3N4 Telephone: (518) 658-4621
Cost	$225.00 (1984)
Components	Each level contains 4 disks, user's guide (27p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, monitor
Other Formats	Available only in Apple format

PROGRAM SUMMARY

CLOZE PLUS is a program designed to develop comprehension and vocabulary knowledge through activities using modified cloze techniques. Each package in levels C-F contains four disks with five lessons on each plus a management system, The lessons provides practice in context analysis skills based on eleven context clues which include synonyms, antonyms, word association, time/order, signal words and phrases, pronoun referents, similarities/differences, form/function, conclusion/summary, categorization/classification, and word definitions. Each lesson consists of a seven to twelve paragraph selection on a particular topic such as natural science, sports, inventions, myths, legends, etc. The lessons are organized in ascending order of difficulty. Visual displays are provided in addition to textual information for some of the selections. The student reads the selection, paragraph by paragraph, and responds to the questions which are mainly multiple choice with a few short answer types. Most of the selections are interesting and contain some American content.

Student interaction is consistent and appropriate. Although the feedback is immediate with graphics providing added interest, more assistance in the negative feedback would be helpful.

The management system, which is optional, is effective and relatively easy to use; however, some teacher time is required to set it up properly. The system automatically keeps track of the students' progress. A printout giving a summary of the relevant skill areas is available. The teacher may assign specific lessons for the student ahead of time. The teacher documentation is clear, detailed, and easy to follow. The documentation includes black line masters for recording skills and scheduling student use of the program.

SPECIAL EDUCATION APPLICATION

Although the target audience indicated by the publisher varies from grade 2 to 6, the program is suitable for more able and advanced students. The reviewer felt that readability levels for learning disabled students for Level C are grades 5-6, level D grades 6-7; Level E grades 7-8; and Level F grades 8-9. The visual and textual feedback is immediate but more assistance would be beneficial.

This software will have somewhat limited use for learning disabled students who are reluctant readers. The format used in the lessons follows a similar pattern and the reluctant reader may become unmotivated. The high cost of the package, $225 for each level, the lack of sufficient assistance with the negative feedback, the lack of branches to provide more instructional and help comments, the American content and the lack of metrication make this a questionable purchase.

CODE QUEST (1983)

Subject	Problem Solving, Mathematics
Topic	Using problem solving strategies to break codes
Users	Gifted grades 4-7, LD grades 5-8
Author	Marge Kosel et al
Publisher	Sunburst Communications Box 3240, Station F Scarborough, Ontario M1W 9Z9 Telephone: 1-800-247-6756
Cost	$87.00 (1988)
Components	1 disk with backup, teacher's guide (21p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, monitor
Other Formats	IBM PC/PCjr, Commodore 64, Tandy 1000, TRS-80 III/IV Colour

PROGRAM SUMMARY

This program is designed to assist students to develop sequencing, decoding, analyzing, pattern identification, classification and discrimination.

The student is presented with up to six successive clues to aid in the identification of a mystery object or person. The clues, written in code form, include ciphers written backwards, number and alphabetic substitution, substitution of code words for a letter, transposition of ciphers using a box grid, and substituting pictures for letters. The student must apply the problem solving skills of discrimination, pattern identification, analysis, classification, sequencing, flexibility and trial and error in an attempt to solve the problem.

Two branches are available: the student experiencing difficulty may access a help branch which provides a clue for solving the problem or may test a theory regarding the cracking of the code by entering a test branch. The student has control of the sequence, rate and amount. Although this program does not include a management system, it does include a teacher option which allows the teacher to enter, delete, or view a mystery object or to delete student saved games. Up to one 100 mystery objects can be saved. The teacher documentation provides an introduction to the program objectives, a background of the study of cryptography, a description of program contents and a description of each of the codes used in CODE QUEST. This program is easy to use in the classroom.

SPECIAL EDUCATION APPLICATION

This program is appropriate for gifted and talented students in grades 4 to 7. The motivating and challenging format encourages the development of logical and inductive thinking skills. The instructional design actively involves the students and requires them to think. This program provides an excellent medium for experimenting to develop and test problem solving strategies. The program offers good user control and is easy to use.

The program is also appropriate for learning disabled students in grades 5 to 8. The ease of use, the motivating format, and the available help branch are strengths. The program serves as a motivational tool and provides an interesting approach to inductive development of problem solving strategies such as classifying, analyzing, decoding, pattern identification and discrimination. However, the teacher will need to monitor the students' progress to ensure that they are trying appropriate strategies and are not becoming frustrated. It may be beneficial for the teacher to provide some preliminary experience in coding strategies before the students use the computer program.

The teacher option which allows the addition and deletion of mystery objects is a useful addition to this program.

COUNT AND ADD (1982)

Subject	Mathematics
Topic	Basic counting and addition skills
Users	LD (primary), EMH (primary), TMH
Author	Steketee Educational Software
Publisher	EduSoft P.O. Box 2560 Dept. 50 Berkeley, CA, 94702 Telephone: (415) 548-2304
Cost	$34.95 U.S. (1987)
Components	1 disk, a backup may be made, user's guide (3p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, colour monitor preferred
Other Formats	Available in Apple format only

PROGRAM SUMMARY

This disk contains four programs:

1. COUNT - The student is required to count coloured objects.
2. ADD 1 - Requires the student to count two groups of objects and the objects are then moved together to determine the sum.
3. ADD 2 - Presents objects to be counted and then added but does not move them together.
4. ADD 3 - The student adds digits without the assistance of concrete objects. If an error is made, the feedback presents objects to be counted and added.

Five questions are presented in each round for each program. The programs are sequenced very well with easy to difficult questions as well as sequence from concrete to abstract. It is unfortunate that when more than ten objects are presented for counting they are not grouped in units of ten. Feedback is immediate and generally very good. The feedback remediates by taking the student through a more-concrete approach to a problem. Remediation is provided after one try: perhaps it would be more effective to allow the student two tries before the remediation begins. Success in any program leads the student to more difficult questions in the same program. Lack of success results in regression to an easier level. Unfortunately, this applies only to a particular sitting since there is no record keeping system in this program.

The teacher can adjust maximum ceilings, initial ceilings and the number of questions by changing the program listing. However, there is no further provision for modifying the content of the program.

The graphics are large and clear, colour is preferred but not essential, and sound is optional.

SPECIAL EDUCATION APPLICATION

The program is interesting, easy to use and provides good feedback. It has useful applications for learning disabled students and educable mentally handicapped who are working at a primary level and have difficulty in counting and adding skills. The range of this program is limited; however, it provides very good sequencing from concrete to abstract. This program may also be used with trainable mentally handicapped students who are beginning to count. The graphics and numbers are large and thus this program may be suitable for visually handicapped students in grades 1 and 2.

The program does not have a record keeping system and does not permit modification of the content; however, with the low cost, these features cannot be expected.

EARLY GAMES FOR YOUNG CHILDREN(1983)

Subject	Early Childhood
Topic	Addition, subtraction, alphabet, number recognition, drawing, counting
Users	LD grades 1-2, EMH grades 1-2, TMH
Author	John W. Paulson
Publisher	Springboard Software Inc. 7808 Creekridge Circle Minneapolis, MN 55435 Telephone: (612) 944-3915
Cost	$39.95 U.S. (1987)
Components	1 disk, teacher's guide (6p)
System Requirement	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, monitor (colour preferred)
Other Formats	IBM compatibles, Commodore 64

PROGRAM SUMMARY

This program is designed to assist students to become familiar with numbers, to teach numerical sequence, to develop matching skills, to introduce addition and subtraction problems together with their related mathematical symbols, to teach the alphabet sequence, to reinforce the concept of same and different, and to provide creative drawing experience on the computer.

The disk contains the following nine games:

1. MATCH NUMBERS - number recognition to 9.
2. COUNT - counting to 9.
3. ADD - addition to 9.
4. SUBTRACT - subtraction to 9.
5. MATCH LETTERS - letter recognition.
6. ALPHABET - the sequence of the letters of the alphabet.
7. NAMES - practice spelling and entering names.
8. COMPARE SHAPES - find the odd shape out of four given shapes.
9. PICTURE DRAW - drawing and colouring pictures on an open computer screen. The picture can be saved on the program disk.

If the games are completed in order, a logical and progressive sequence is offered. Tutorial branches are available for five of the games. However, students will require an initial introduction to using the games and then they should be able to follow the visual prompts independently. Good eye-hand coordination is required for the PICTURE DRAW.

The students will use all alpha and numeric keys, the escape key, control key and the space bar by the time they have completed all nine games. The program uses flashing prompts and colour to draw attention to the concept being considered. Colour, graphics and sound are adequate; however, the representation of some letters is not very good such as the capital "M" and "W". Generally, young children find the games motivational and have fun while learning. The program is more effective if a colour monitor is used.

The documentation contains all the information necessary to use the program within the classroom and provides useful suggestions for additional student activities. There is no management system in this program and the program lacks a method of evaluating student responses or student progress. It is unfortunate that the teacher has no control over the number and type of questions a student attempts.

SPECIAL EDUCATION APPLICATION

This is a good program for young children having difficulty in reading and mathematics readiness skills. The program is appropriate for learning disabled students in grades 1 and 2 who are having difficulty with number recognition, counting, adding, subtracting, letter recognition, alphabetizing, writing names, or shape discrimination. The numbers' and letters on the screen are large. Educable mentally handicapped students will benefit from the repetitive practice that this program can provide; however, they will require assistance in the initial stages.

This program may also be useful with trainable mentally handicapped students who are ready to begin readiness skills in reading or mathematics.

EASY AS ABC (1984)

Subject	Language Arts
Topic	Identifying letters, learning alphabetical order, matching upper and lower case letters
Users	LD grades 1-3, EMH grades 1-3, TMH, Visually impaired grades K-2, Hearing impaired K-2
Author	None Cited
Publisher	Springboard Software Inc. 7808 Creekridge Circle Minneapolis, MN 55435 Telephone: (612) 944-3915
Cost	$39.95 U.S. (1988)
Components	disk, teacher's guide (25p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, colour monitor preferred, joystick (optional)
Other Formats	IBM/PC PC/jr, Commodore 64, MacIntosh/MacIntosh Plus

PROGRAM SUMMARY

This program is designed to develop a student's ability to identify letters, put letters into alphabetical order and match upper and lower case letters. The program provides five game formats:

1. MATCH LETTERS - This game develops discrimination and matching skills with upper and lower case letters.
2. DOT TO DOT - Sequencing of the alphabet by joining lettered dots in the correct order is involved in this game. It begins with an "A", but after that, the first letters can be from anywhere in the alphabet. Once the dots are joined correctly a colourful picture appears.
3. LEAP FROG - this game involves sequencing of a series of three letters from anywhere in the alphabet.
4. LUNAR LETTERS - The student must identify the first letter from a series of six letters and then complete the sequence.
5. HONEY NUT - This game involves the recognition of upper and lower case letters.

Larger than normal upper and lower case letters are used throughout this program. Graphics, colour and sound (optional) are used effectively. A monochrome monitor can be used but is not as effective. The variety provided in the game formats is highly motivating and provides a great deal of practice.

No management system is included and no provision for modifying the content is permitted.

SPECIAL EDUCATION APPLICATION

This program can be used effectively with young learning disabled and educable mentally handicapped students who require reinforcement in letter recognition, upper and lower case matching, and simple alphabetizing skills. The game formats provide a great deal of practice in an interesting and motivating way for the students. The animated graphics are appealing to this age group. The method of interaction is kept simple: arrow keys and space bar or a joystick may be used.

The clear and simple screen layout with large print size make this program appropriate for visually impaired students. Hearing impaired students could use this program since the sound is not an integral part of the program.

EXPLORER METROS (1981)

Subject	Mathematics, Science
Topic	Metric System - mass, capacity, length and temperature
Users	Gifted grades 3-6, LD grades 5-7
Author	David Burgess et. al.
Publisher	Sunburst Communications Box 3240, Station F Scarborough, Ontario M1W 9Z9 Telephone: 1-800-247-6756
Cost	$87.00 (1988)
Components	1 disk with backup, teacher's guide (27p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, monitor
Other Formats	Available in Apple format only

PROGRAM SUMMARY

This program is designed to give students experience in using metric measurement and to develop estimation skills, using mass, capacity, length and temperature. Students must have basic knowledge of metrics before using this program.

The space simulation game explores a colourful, alien planet. As leaders of an exploration party, the students are faced with randomly generated encounters and problems. They must make decisions and relay them back to the captain. Students may consult a metric table or a robot named Dugan before answering; however, if they fail to complete all the encounters in the allotted time, they are beamed back to the ship. The computer varies the elements of the simulation each time and thus the program can be run repeatedly without boredom. The reading level is approximately grade 4.

Most aspects of the technical design are satisfactory with the exception of frequent delays when the program accesses the disk for each encounter. A colour monitor may be used but it is not essential. The editor function allows the teacher to enter, change, display and delete an encounter. This is an asset allowing the program to be adapted to specific needs provided the teacher takes the time to make the changes.

SPECIAL EDUCATION APPLICATION

This program gives the student a motivational and fun way to practice estimating metric measurement and decision making. It is appropriate to be used as an enrichment program in grades 3-6. The fact that the teacher is able to make changes by using the editor allows customizing the program to the needs.

The program may also be used with learning disabled students in grades 5-7 if they need review and reinforcement in the use of metrics. However, it is important that they have previous instruction in these concepts since the program does not pretend to teach metrics but merely to review and reinforce. If the reading level is too difficult for some of the LD students, the teacher can use the editor to make modifications.

THE FACTORY (1983)

Subject	Problem solving, Mathematics
Topic	Understanding sequence, logic, efficiency, inductive thinking, spatial perception
Users	Gifted grades 3-7, LD grades 4-9, IOP (Junior High)
Author	Mike Fish and Marge Kosel
Publisher	Sunburst Communications Box 3240, Station F Scarborough, Ontario M1W 9Z9 Telephone: 1-800-247-6756
Cost	$87.00 (1986)
Components	1 disk with backup, teacher's guide (11p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, colour monitor preferred
Other Formats	IBM PC/PCjr, Commodore 64, Tandy 1000, TRS-80 Colour Computer

PROGRAM SUMMARY

This program promotes the development of problem solving skills using the concepts of sequence, rotation, visual discrimination, spatial perception and logic. Students are presented with three different machines that can rotate, punch holes and draw stripes on a rectangle. The "rotate" machine can rotate the rectangle 45, 90, 135, or 180 degrees. Up to three holes, using a square or circle shape, can be punched. The "stripe" machine makes narrow, medium or thick lines across the rectangle. The student may practice using each machine to see its action, have another student try to set up the machines to duplicate the pattern, or try to set up a series of machines. There are three levels of difficulty:

1. TEST A MACHINE - allows students to experiment with the three machines.
2. BUILD A FACTORY - allows students to design their own product using one to eight machines.
3. MAKE A PRODUCT - permits a student to examine a product and then work backwards to determine what process took place to construct the product.

This program provides excellent sequencing by allowing the students to first learn the use of the machines through simple manipulations and then move on to more challenging ones. The students are encouraged to approach problem solving from many different perspectives.

SPECIAL EDUCATION APPLICATION

The program is appropriate for gifted and talented students in grades 3 to 7. The instructional design actively involves the student and is motivating and challenging. This program provides the student with an excellent medium for experimenting to develop problem solving strategies and inductive thinking skills. It focuses on sequencing, spatial perception, visual reasoning, and rotation. Students can also create challenging patterns of their own and have their peers try to duplicate them. This program encourages students to use different approaches to achieve a desired result. The program offers good user control and is easy to use.

The program also offers potential use for learning disabled students in grades 4-6, junior high learning disabled students as well as the students in Integrated Occupational Program (I.O.P.). It provides a great deal of visual manipulation, experimentation and encourages collaborative learning. Although the program cannot be modified, it does allow a student to create a pattern which can be duplicated. The "game" type format makes this program a good motivational tool and provides an interesting approach to developing problem solving skills.

FAY: THAT MATH WOMAN (1983)

Subject	Mathematics
Topic	Addition, subtraction, multiplication, and division of whole numbers
Users	LD grades 2-4, EMH 3-5, TMH, Gifted grades K-2
Author	David Vincent and Paul Melhus
Publisher	Didatech Software 3812 Willam Street Burnaby, B.C. V5C 3H9 Telephone: (604) 299-4435
Cost	$44.95 (1988)
Components	1 disk with backup, user's guide (5p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, colour monitor preferred
Other Formats	Commodore 64

PROGRAM SUMMARY

This program is designed to reinforce skills in:

1. Recalling basic arithmetic facts up to and including 18.
2. Completing basic operations with whole numbers at the pictorial and abstract levels.
3. Using the number line to solve arithmetic equations.
4. Conceptualizing subtraction as the inverse of addition, and division as the inverse of multiplication.
5. Recognizing multiplication as the grouping of equal numbers.
6. Understanding the concepts of "less than" and "greater than".

Programs 1, 2, 5 and 6 present tutorial levels of 15 number lines each. Animated graphics are used effectively to illustrate arithmetic equations of addition, subtraction, multiplication and division by "Fay" walking, pausing or leaping along number lines. This graphic presentation adds clarity to abstract concepts and helps to reinforce the number concepts in a clear and interesting manner. Programs 3 and 4 are two game levels which have a time factor.

The program provides excellent sequencing if it is followed in order. The student is automatically lowered to an easier skill level if incorrect responses are given after repeated attempts. The instructional technique and amount of student interaction are appropriate. Questioning techniques and feedback are effective. A second incorrect response is followed by "Fay" enacting the correct answer with sound being used to reinforce the counting process.

The new version of this program contains a record keeping system which tracks errors made and allows them to be displayed on the screen or printed after each session. It also includes a simple authoring system to allow teachers to input their own content to meet the specific needs of students.

SPECIAL EDUCATION APPLICATION

This program can be use effectively to provided extended drill and practice for learning disabled students and educable mentally handicapped children who need a great deal of reinforcement for mastery of simple basic operations. This program should only be used after the concepts have been taught using concrete objects and manipulatives. The graphic presentation provides visual reinforcement to assist in grasping the concepts. The teacher needs to monitor the timed parts 3 and 6 to make sure that the student does not become frustrated by the time limit. Part of this program which deals with addition and subtraction may also be useful for some of the trainable mentally handicapped who are operating at this level in mathematics. The motivating format would keep their attention.

The highly motivated format makes this program appropriate for use with gifted students in kindergarten to grade 2. The simple authoring system its in the new version of this program adds to flexibility and lends itself to more individualized use with special needs students.

FAY: THE WORD HUNTER (1985)

Subject	Language Arts
Topic	Spelling Skills
Users	LD grades 4-7, Gifted grades 3-6
Author	David Vincent & Allan Foresberg
Publisher	Didatech Software 3812 William Street Burnaby, B.C. V5C 3H9 Telephone: (604) 299-4435
Cost	$44.95 (1988)
Components	School edition - 1 disk with backup, teacher's guide (26p)
System Requirement	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, colour monitor preferred, joystick (optional)
Other Formats	Commodore 64

PROGRAM SUMMARY

This program is designed to aid students in the recognition, recall and spelling of words they most frequently read and write; to present words in lists for immediate and delayed recall; to promote the visual image of the word by requiring the student to look at the word in isolation and then search for the correct sequence of letters among a random string of letters; and to present students with the words most frequently misspelled, 200 of which have been programmed to appear more frequently than other words.

The program is composed of word search games consisting of six levels of difficulty. The program uses an animated game format in which students identify nine randomly chosen words which are arranged vertically or horizontally in a grid puzzle. The complexity and length of words increase with each succeeding level. Each level is timed with the time being decreased at the higher levels. More than 3,000 high frequency words are used in this program.

The game format with graphics, colour and sound (optional) is highly motivating. Although a colour monitor is preferred, this program can be used effectively on a monochrome monitor.

Weaknesses in the program include the lack of lower case letters, no evaluative information and no management system. Some students may also have difficulty with manipulating the keyboard or joystick for the games. The teacher must monitor this and may need to provide assistance in the initial stages to students with poor eye and hand coordination skills.

The authoring system is a good feature to meet the need of specific students and is relatively easy to use; however, teacher time will be needed to create new lists.

SPECIAL EDUCATION APPLICATION

This program makes learning fun. The motivating game format can be used to assist learning disabled students to improve their spelling skills, visual discrimination and visual memory. However, the teacher will need to monitor the program in order to see that the student is able to either manipulate the joystick or use the keys effectively. There are a number of things happening at once: the student sees flickering on the screen, hears the ticking of the timer, must concentrate on visual images of a specific word and must manipulate keys or a joystick. Some students may find this very confusing and may be unable to cope. Furthermore, some teachers will not be interested in using this program because only upper case letters are used in the spelling.

The program could be used effectively by gifted students or as enrichment. The game format could be used to increase speed and efficiency in word recognition, improve visual memory and improve eye-hand coordination. Challenging words could be included for this target audience.

The fact that the content of the program can be modified by the teacher to meet specific needs is a very positive feature.

FAY'S WORD RALLEY (1984)

Subject	Language Arts
Topic	Sight word acquisition, sentence comprehension, vocabulary development, reasoning skills development
Users	LD grades 1-6, 5-7; EMH grades 2-6 with appropriate reading levels; TMH (limited use)
Author	Kidsoft Software
Publisher	Didatech Software 3812 William Street Burnaby, B.C. V5C 3H9 Telephone: (604) 299-4435
Cost	$59.95 (1988)
Components	1 double-sided disk with backup, teacher's guide (77p), supplementary data disks are also available
System Requirement	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, colour monitor preferred, joystick (optional)
Other Formats	Commodore 64

PROGRAM SUMMARY

This program is designed as a supplement to teacher instruction in order to reinforce and review sight word acquisition, sentence comprehension, vocabulary development, reasoning skills such as seeing relationships, classifying, recognizing categories, and comparing and contrasting. This program also reinforces rhyming and phonics skills.

The four components of this program consist of a keyboard tutorial, directions for playing the game, game options and the game itself. There is also a record keeping system and provision for teachers and students to input their own sets of words and clues. The program includes the basic words from the Ginn 720 reading series levels 2 to 9, and enrichment words from levels 8 and 9. A game format is used to present eighty sets of words and clues which increase in difficulty and are intended for grades 1, 2 and 3. Each set presents a maze in which nine words can be found. The student must read the clue at the bottom of the screen to determine the word required in the maze and then drive the car through the maze to that word. The clues may include context, opposites, synonyms, homonyms, categories, rhymes, definitions and visual clues. Points are won or lost by driving the car over the correct or incorrect word.

A Ginn Intermediate Data Disk which provides drills based on levels 10 to 13 and allows the game to be extended to grades 5 and 6 is available. Although the basic game is the same, three new types of clues have been included which require higher level thinking skills.

This program is interesting, well designed and provides good drill and practice. The game format, animation and colour add interest and make learning fun. The program is sequentially developed and presents the vocabulary from easy to difficult in an effective manner. Although the words which are included in the program are specific to the Ginn 720 reading series, the teacher may modify the program to suit student needs. It is noted that modification will require teacher time. The documentation is very good with excellent suggested pre-activities. The inclusion of word list is an asset. The management system is simple, easy to use and provides adequate information. The main weakness of this program is the lack of a review branch for those words incorrectly chosen on the first try rather than including all the words in the review.

SPECIAL EDUCATION APPLICATION

This interesting and motivating program can be used effectively for learning disabled students and educable mentally handicapped children who require reinforcement and review of sight words, comprehension and vocabulary skills. Most of the vocabulary content of levels 2-9 would be suitable for grades 1 to 6. Trainable mentally handicapped students would benefit from the lower levels. The Ginn Intermediate Data Disk would be suitable for learning disabled students in grades 5 to 7. The fact

that teachers can modify the words and clues provides potential use with a wide range of students.

After careful introduction and explanation by the teacher, the students will find the program easy to use; however, students with poor hand and eye coordination may find moving the car frustrating and may require assistance. Teachers will also need to make sure that the clicking prompt is not an interfering stimulus for the students.

FRACTION FACTORY (1983)

Subject	Mathematics
Topic	Fractions of a set, equivalent fractions, fractions of a number, addition and subtraction of fractions
Users	Limited use with LD and EMH students in grades 4-7
Author	Robert Eyestone
Publisher	Springboard Software Inc. 7808 Creekridge Circle, Minneapolis, MN 55435 Telephone: (612) 944-3915
Cost	$29.95 U.S. (1988)
Components	1 disk, teacher's guide (6p)
System Requirement	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, colour monitor preferred
Other Formats	IBM PC/PCjr, Atari, Commodore 64

PROGRAM SUMMARY

This program provides drill and practice in five different areas: finding fractions of a set, finding equivalent fractions, finding fractions of a number, and adding and subtracting proper fractions.

The program uses graphics in number lines and rectangles divided into equal portions and symbols such as hearts, diamonds, circles, trees and asterisks to portray problems. Each game consists of ten questions. The student can access the program through a picture or word menu, however, the picture menu is very slow.

Three types of questions are posed: word questions, computational problems and visual problems, all of which require numerical input. The sequence and rate are user controlled. Sequencing from easy to difficult within the programs is very good. When a problem is missed, it is presented again up to three times with increasing degrees of help using visual representations. Coloured graphics are effective in conveying concepts and aiding student motivation; however, the "bouncing head" moving up a staircase for positive reinforcement is time consuming. While sound adds interest, unfortunately it cannot be disabled and may prove disruptive in a classroom.

No management system is included and no provision for modifying the content is permitted. This program does not incorporate any remedial branches nor does it record the number of incorrect responses.

SPECIAL EDUCATION APPLICATION

This program can be used with learning disabled and educable mentally handicapped requiring reinforcement in the use of fractions. The program provides reasonable motivational drill in operations with fractions. There is good sequencing from one program to the next and explanations include both text and demonstration examples and make good use of colour and graphics for instruction. The use of visual representations when the student needs help is a program strength. The concepts dealing with fractions must be taught prior to using the program.

The weaknesses include the lack of quantitative feedback, the inability to control sound and the inability to modify any of the content.

GERTRUDE'S PUZZLES (1984)

Subject	Problem Solving
Topic	Reasoning skills
Users	LD ages 8-10, EMH ages 10-13, Gifted ages 6-8
Author	Leslie Grimm, Teri Perl & Warren Robinett
Publisher	The Learning Company 545 Middlefield Road, Suite 170 Menlo Park, CA 94025-9968 Telephone: (415) 328-5410
Cost	$54.95 U.S. (1987)
Components	1 disk with backup, teacher's guide (57p) 32 black line master activity sheets
System Requirement	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, colour monitor, joystick (optional)
Other Formats	PC IBM PC/jr, Atari, Commodore 64

PROGRAM SUMMARY

This program is intended to provide a discovery approach using a game format to reinforce the attributes of colour and shape. Students solve complex puzzles to develop reasoning skills. Students learn to solve problems with incomplete information and analyze what they see by moving puzzle pieces to form colour and shape patterns.

Three types of puzzles, each having two or three levels of difficulty, are provided. The student manipulates coloured shapes to solve problems involving similarities and differences. Two of the puzzles require the student to arrange shapes according to given rules. In the third puzzle the student must decide what rule is being applied. The disk includes an optional tutorial, instructions for each puzzle, examples of completed puzzles, provision for the selection of different game shapes, and an editing feature to create new shapes.

The instructional technique, student interaction, graphics and colour are effective. The puzzles are motivating and thought provoking and are particularly suited to the development of problem solving skills.

SPECIAL EDUCATION APPLICATION

This program promotes logical sequencing, reasoning, convergent thinking and visual discrimination involving colours and shapes. The game format, graphics and colour are used effectively to provide a motivating and interesting learning experience. The program's ability to accept multiple correct solutions is a strength. Gifted 6 to 8 year-olds can play the games; however, the 6 year-olds will require assistance in reading the instructions. It is important to note that students using this program need good eye-hand coordination in order to manipulate the shapes on the screen effectively. The edit feature can be used effectively as enrichment with students aged 7-10.

This program is suitable for learning disabled students ages 8-10 who are having difficulty in ordering, sequencing, and recognizing same-different relationships in shapes and colours. EMH students, ages 10-13, can benefit from this program but may need help in reading the instructions.

THE HINKY PINKY GAME (1983)

Subject	Language Arts
Topic	Matching words with definitions
Users	Gifted grades 3-7, LD reading at grade 4-7 level, IOP Junior and Senior High
Author	The 22nd Avenue Workshop
Publisher	Mindscape Inc. 3444 Dundee Road Northbrook, IL 60062 Telephone: (312) 480-7667
Cost	$49.95 U.S. (1987)
Components	1 double sided disk, teacher's guide (3p)
System Requirement	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, monitor, printer (optional)
Other Formats	Available only in Apple format

PROGRAM SUMMARY

This program is designed to help the student enrich vocabulary development, stimulate imagination, develop context clue skills, integrate creative writing, emphasize contrastive spelling, promote syllable recognition and increase dictionary and Thesaurus use.

This interactive game provides an interesting and motivating approach to enriching language skills. It provides practice by matching rhyming words with definitions. The program provides 180 problems taken from the rhyming lists which contain over 6,400 words nouns and verbs arranged in 1,100 categories. Four levels of play are offered: easy, hard, hardest and items created by the user through the authoring system. The levels of play which are program-generated increase in difficulty according to the number of syllables, vocabulary and contrasting spellings. The student must determine the rhyming pairs of words that match the definitions and formulas. The definitions cover both words in the rhyming pair and the formula gives the number of syllables in each word. Hints, which may be another definition or may give more information about either word in the pair, are available. The word pairs are presented randomly within a word list. The content is current and accurate. Occasionally, a definition contains an ethnic reference that may reflect some bias.

The inclusion of an authoring system which provides the option of creating additional problems is an important asset. Colour, graphics and a sound option are included in the program; however, even though the graphics are positive and encouraging, they lack variety and are repetitive. No management system is included in the program. The lack of quantitative feedback and the lack of a correct answer after all the hints have been exhausted are weaknesses.

SPECIAL EDUCATION APPLICATION

This program with its game format provides a unique, interesting and enjoyable approach to enriching language skills. It could be used very effectively with gifted students from grades 3 to 7. The authoring system can be used to stimulate imagination and encourage creative thinking by allowing students to create their own problems. The reading level of the "easy" level is about grade 4, the "harder" level is grade 5-6, and the "hardest" level is about grade 6-7.

The program can also be effective with learning disabled students who require stimulation in developing language skills such as vocabulary development. The program is very easy to use and is interesting and motivating. Students must be reading at a grade 4 level to begin using the program unless the teacher takes the time to input problems at a lower reading level.

Students in the IOP (Integrated Occupational Program) in junior and senior high school, reading at a grade 4-7 level, could also benefit from this program.

The reviewer indicated that this is a very worthwhile product to purchase since it can be used effectively with a variety of students.

THE KING'S RULE (1984)

Subject	Problem Solving, Mathematics
Topic	Matching words with definitions
Users	Gifted grades 3-7, LD grades 5-9, EMH grades 5-9 (level 1-3)
Author	Thomas C. O'Brien
Publisher	Sunburst Communication Box 3240, Station F, Scarborough, ONT MIO 9Z9 Telephone: (800) 247-6756
Cost	$87.00 (1988)
Components	1 disk with backup, teacher's guide (21p)
System Requirement	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, monitor
Other Formats	IBM PC/PC jr, Commodore 64, Tandy 1000, TRS-80 111/1V colour

PROGRAM SUMMARY

This program is designed to train students to form and test hypotheses and relationships, and to develop skills in critical thinking and problem solving.

THE KING'S RULE, written in a fantasy game format, allows a student to advance through a castle by successfully generating and testing hypotheses at six levels of difficulty. If the student reaches the throne, he or she is awarded the crown.

At each level students are shown three numbers which correspond to a secret mathematical rule. Students must generate a hypothesis and test it by entering their own sets of three numbers that they think comply with the rule. The computer then checks their responses. When the students feel they know the rule, they can take a five-question quiz which will test their conclusions. The students must solve three consecutive number riddles at each level before being allowed to progress to next level of difficulty.

The program is sequenced very well with Level 1 games dealing with small upward/downward jumps from 1-10 inclusive and gradually increasing in difficulty to Level 3 which includes numbers between 1 and 30. Level 4 games introduce linear equations, exponents and absolute values. Levels 5 and 6 progress to number relationships such as consecutive even numbers, multiples, consecutive multiples, addition of constants, ascending orders and the idea of a number being divisable by or ending in a specified number. The sequence progresses from concrete to more abstract principles, but the transitional jump between level and 4 is large.

The teacher has the option of raising or lowering the levels of difficulty for the students thus enabling the disk to be used with a variety of specific learners. Students have total control of rate and amount of content.

The instructional design is educationally sound. Effective branching provides additional hypotheses testing for students who are unable to complete a given task successfully. The game format provides an effective and motivating approach to develop critical thinking skills. Students using the program should be at grade 4 reading level (Fry).

The technical quality is very good with displays that are well formatted and contain ample space for a "work area" for students to test their hypotheses. The colourful graphics add interest to the program.

SPECIAL EDUCATION APPLICATION

This program is very appropriate for gifted and talented students in grades 3 to 7. The motivating and challenging format encourages the development of logical and inductive thinking skills. The instructional design actively involves the student and requires the student to think. This program provides the student with an excellent medium for experimenting to develop and test hypotheses and develop problem solving strategies. The program offers good user control and is easy to use.

Level 1 - 3 are appropriate for learning disabled students in grades 5 to 6 and levels 4 - 6 are more appropriate for grades 7 to 9. However, levels 5 and 6 involve increasingly subtle hypotheses and may be too difficult for some of these students.

Levels 1 - 3 which are sequenced from very easy and progress gradually to more difficult questions would also be appropriate for some of the educable mentally handicapped. The ease of use and the motivating format which encourages students to identify patterns, to generate and test a working hypothesis by asking questions, to try out new number combinations and request recaps of data can provide an effective way to assist students to achieve higher level problem solving strategies. However, the teacher will need to monitor student progress to ensure that the students are not frustrated. It may be beneficial for students to work in pairs or small groups as peer learning can be very helpful.

MAGIC SLATE (1987 version 1.3)

Subject	Language Arts
Topic	Word processing
Users	LD grades 4+, EMH Grades 4+, Visually impaired grades 2+ (20-column), Gifted grades 1+
Author	Donna Stanger et al
Publisher	Sunburst Communications P.O. Box 3240, Stn F Scarborough, On M1W 9Z9 Telephone: 1-800-247-6756
Cost	LRDC Buyers Guide
Components	1 20-column disk with backup, 1 40-column disk with backup, 1 80-column disk with backup, teacher's guide (200p) reference manual (58p) reference cards
System Requirement	Apple II+/IIe/IIc/IIgs, 48K, 1 or 2 disks'drive, monitor, graphics printer desired, 80-column card needed for Apple IIe or IIc with 80-column version
Other Formats	Available only in Apple format

PROGRAM SUMMARY

This program includes three disks which offer three word processing formats: a 20-column version designed for young students, exceptional children and the visually impaired; a 40-column level designed for intermediate users; and an 80-column version designed for advanced users.

The 20-column version with its large print offers only rudimentary functions chosen by an icon such as edit, load, print, new, save, delete, make and quit. The 40-column version adds options such as justification, underlining, and a choice of seven type styles. While the 80-column version offers complete functions.

Document creation is straightforward. The commands are intended to be mnemonic for easy use; however, there may be some confusion since some of the commands do different things in different modes. This program automatically saves text to disk at periodic intervals, but the files must be saved at the end of the creation process. Margin defaults are built-in but are adjustable.

It is noted that if your printer does not have graphics capabilities, it will not be able to print the large letters in the 20-column and may not print all the type styles in the 40 and 80-column versions.

The teacher documentation is comprehensive, well-organized and provides very good examples and classroom implementational suggestions. One part of the documentation, "Magic Slate Handbook" can be reproduced for student use to provide them with good explanations of the major features of the program.

SPECIAL EDUCATION APPLICATION

MAGIC SLATE is tailored to the needs of exceptional children in that the multi-format versions will grow with the needs of the student. As the size of format increases, the level of sophistication grows. The program is easy to use, provides very good documentation with excellent lesson plans for initial involvement, and provides a choice of type styles (provided the necessary hardware is available).

This program is applicable to learning disabled and educable mentally handicapped students from grades 4 up. The students will likely begin with the 20-column version which is very easy to use and then advance to the other versions as they are ready. The fact that the students are able to see a neatly printed copy of their work is very encouraging and helps to improve the student's confidence and self-esteem. This program may also be a very good writing motivator for those students who have very poor handwriting skills.

The 20-column version can be used effectively to assist the visually impaired student who is functioning at a preliminary word processing level.

MAGIC SLATE offers potential use for enrichment and gifted students from grade 1 up. This program can be used effectively in the writing process for poetry, stories, reports, school news items, and many other writing activities. The version used will depend on the needs and level of sophistication of the students.

Please note that MAGIC SLATE II will be available in the near future. It is an updated version of this program and includes several new features among them "fill in" mode that permits teachers to create permanent sentences for students to complete "teacher and student planners" in the 40 and 80-column formats; "Cut and Paste" capabilities; increased margin capabilities; the ability to change typestyles without retyping; improved printing capabilities; ability to utilize a modem; and the ability to access a spell checker which will be published in 1988. This version was not available at the time of this review.

MAGIC SPELLS (1985)

Subject	Language Arts
Topic	Unscrambling words, spelling practice
Users	LD grades 2-6, EMH Grades 2-9, Gifted grades 2-6
Author	Leslie Grimm
Publisher	The Learning Company c/o Addison Wesley Box 580, 26 Prince Andrew Plaza Don Mills, ONT M3C 2T8 Telephone: (415) 328-5410
Cost	$89.25 (1987)
Components	1 disk with backup, teacher guide (50p), activity sheets (44p)
System Requirement	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, colour monitor preferred
Other Formats	IBM PC/PCjr, Commodore 64

PROGRAM SUMMARY

This program uses a game format designed around a fantasy theme of castles, demons and unicorns to provide spelling drill and practice. The program consists of two main parts:

1. a) SCRAMBLE SPELL - This is a game in which students practice spelling words by unscrambling letters of words presented randomly from a current spelling list. Since all the letters of the word appear on the screen, the students can compare the letters they see with the letters they use to spell the word.
   b) FLASH SPELLS - In this game the students see a work flashed on the screen for one to nine seconds and then they must correctly type that word. This game is intended to provide practice in focussing attention, increasing word recognition speed and developing visual memory.
   In both games, the students are allowed to choose a spelling list from a games option menu and a statement of rules is available for each game. There are fourteen lists varying from six to twenty words composed of up to fifteen letters each.
2. SPELL WRITER - This is an authoring utility for teachers or students to create files for the student games. This utility allows the teacher to enter a new list, delete a word or a complete list, view the lists, copy the lists of words using the printer, and store all new words on the disk. The teacher can create a maximum of thirty lists consisting of one to twenty words with a maximum of fifteen letters per word.

The user support materials which supplement the computer program include activity sheets which may be reproduced. They include lists of spelling words and tests, spelling enrichment activity pages of word games and puzzles, and extra skill activities that includes dictionary skills, alphabetizing, homonyms, antonyms, synonyms, etc. There is no management system but record sheets are included for student tracking.

SPECIAL EDUCATION APPLICATION

This program can be used effectively in the language arts program if the teacher uses the utility to create spelling lists which have appropriate sequential development and depth for special needs students. The main drawback in this program is that the words are not presented in context and no management system is included. In spite of these weaknesses the ease with which the program can be used, the ability to make modifications and the strong support materials are very positive features in considering this product.

The FLASH SPELLS program is appropriate for practice in attention focussing, increasing word recognition speed and developing visual memory for learning disabled in grades 2-6 and educable mentally handicapped students in grades 2-9. The teacher is able to adjust the words to the student's level. However, the graphics may be too simplistic for some of the older students. SCRAMBLE SPELLS may be frustrating for some of the EMH students.

Both games can be used with gifted students in grades 2-6 if the teacher provides challenging words in the games.

MASTERTYPE (1984)

Subject	Keyboarding, Computer Literacy
Topic	Keyboarding instructions, finger positioning exercises, sentence practice
Users	Gifted grades 3-7, LD grades 4-9
Author	Bruce Zweig
Publisher	Scarborough Systems Inc. 55 South Broadway Tarrytown, NY 10591 Telephone: (914) 332-4545
Cost	$39.95 U.S. (1985)
Components	2 disks, user's guide (46p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, colour monitor preferred
Other Formats	MacIntosh, IBM PC/PCjr, Commodore 64, Atari

PROGRAM SUMMARY

The objectives of this program are to learn correct fingering and positioning for touch keyboarding using the home row keys as a base and to learn to type quickly and accurately.

This package contains both a training disk and a game disk. The training disk offers four menu choices:

1. MASTERTYPE FINGERING CHART - Proper fingering technique is illustrated.
2. TIMED FINGER PRACTICE - Begins with practice typing single letters beginning with home row keys and progresses to upper and lower row keys. This section culminates with two, three and four letter combinations randomly using all keys.
3. WORD SENTENCE PRACTICE - Six lessons offer speed and accuracy practice at a choice of slow, medium or fast speeds.
4. MASTERTYPE TRAINING GAME - This game (disk two) has four modes: beginner, cadet, commander, and continuous demo. The object of the game is to shoot down four words by typing them correctly before they destroy the user's spaceship. Words that are entered quickly and accurately are "destroyed" and do not reappear; however, students will gain additional practice on problem words since words which are not destroyed will reappear.
   On the training disk, the words typed per minute together with the error count are flashed immediately after the completion of an entry.

This program offers several technical strengths. High resolution graphics are used to illustrate the keyboard and proper finger controls. The program is adaptable for use with one or two disk drives and with QWERTY or DVORAK keyboards. A colour or monochrome monitor may be used and sound can be disabled.

The teacher documentation provides adequate information to enable easy classroom implementation. However, teacher monitoring is required to make sure that proper fingering is used. Teachers have the option of inputting word lists of their own but the full 40 words allowed per lesson must be entered and the individual word length is limited to nine characters.

A content error was noted in the chart depiction of proper fingering techniques: the number 6 key should be controlled by the "j" finger, not the "f" finger as illustrated.

SPECIAL EDUCATION APPLICATION

This program can be used effectively with gifted students in grades 3 to 8 and learning disabled students in grades 4 to 9. The important purpose of keyboarding is to develop skills required to become effective users of word processors in the writing process. On the other hand, the added practice may help to improve poor eye-hand coordination.

MATH ACTIVITIES COURSEWARE (MAC) 1,2,3,4,5,6,7 (1983-1986)

Subject	Mathematics
Topic	Listed in Summary
Users	Gifted grades 1-7, LD grades 2-9, EMH grades 1-9
Author	Doug Super et al
Publisher	Houghton Mifflin Canada Ltd. 150 Steelcase Road West Markham, Ontario L3R 1B2 Telephone: (416) 474-1755
Cost	LRDC Buyer's Guide
Components	Each level has disks with backups, teacher's guide, worksheets and suggested activities
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, colour monitor preferred IBM PC/PCjr, PC-DOS, 1.1, 2.0 or 2.1, 128K, 1 disk drive, colour monitor preferred, graphics card
Other Formats	Commodore 64

PROGRAM SUMMARY

This is a courseware series designed to support the teacher of fundamental mathematical concepts and problem solving strategies. The programs in each series use a game format to help reinforce estimation, operations with whole numbers, decimals and fractions in an interesting and motivating way. The grade 1 and 2 levels contain 12 programs while grade 3 to 7 have 15 programs. The main areas covered in each level are:

MAC 1	Whole numbers, counting, ordering, adding, subtracting, problem solving, telling time and congruency.
MAC 2	Whole numbers, ordering, adding, subtracting, problem solving, telling time and congruency.
MAC 3	Whole numbers, decimals, fractions, estimation, problem solving, telling time and congruency.
MAC 4	Whole numbers, decimals, fractions, estimation, problem solving, area congruency, making change.
MAC 5	Whole numbers, decimals, fractions, estimation, problem solving, rounding, area, perimeter, time.
MAC 6	Whole Numbers, decimals, fractions, estimation, problem solving, metrics, time.
MAC 7	Whole numbers, decimals, fractions, estimation, problem solving, flow charts, LOGO.

Although each of the activities in the programs is intended to meet certain objectives related to a central concept from one of the units in the corresponding *Houghton Mifflin Mathematics* textbook, this program can be used with other mathematics series. However, the teacher would have to cross-reference the objectives as the courseware is intended to supplement teacher instruction and is not intended to stand alone.

The programs are designed to be used by individuals or small groups, and students can play against each other or against the computer. The game format is both unique and imaginative and effectively reinforces classroom teaching. Prior introduction to each activity by the teacher is recommended. The content is current and metricated. The programs are very helpful in strengthening problem solving strategies and as a reinforcement of basic skills and other mathematical concepts.

The simple management system allows the teacher to edit the menu by deleting those activities the students will not do in MAC 2-7, thus, the students will use only those activities related to the concepts the teacher has chosen. However, MAC 1 is the only level that allows the teacher to modify the content in each activity. Unfortunately, this program does not provide a system to track student progress.

SPECIAL EDUCATION APPLICATION

Most of the activities at each level are open-ended and can be played with different degrees of sophistication thus accommodating a greater variety of ability levels. The effectiveness of the program can be improved by pairing students or establishing a small team approach. Care must be taken in choosing the activities for learning disabled and educable mentally handicapped. Many of the timed programs may cause frustration and need to be monitored.

MAC 1 may be used with gifted kindergarten students and some of the activities lend themselves very well for use with enrichment in grade 1. The learning disabled students and the educable mentally handicapped students in grades 2 to 3 could make good use of this program for reinforcement of skills through a motivating game format and animated graphics. The fact that the teacher can modify the program is an important asset.

MAC 2 has considerable range and depth and would be appropriate for learning disabled and educable mentally handicapped students in grades 3 to 6 and is appropriate for enrichment for students in grades 1 and 2. Not all programs are suitable for this total target audience; therefore, the teacher will choose those that meet specific needs. It is important that the teacher introduce each activity especially for the LD and EMH students.

MAC 3, games 1, 3, 4, 6 and 11 are easy to play and may be suitable for learning disabled students from grades 4-6. Most of the other games require good concentration and very good and quick estimation ability. The teacher must monitor the students to ensure that the timed activities do not become frustrating for the LD student. The other programs are motivating and challenging and are more suitable for gifted students from grades 3-4.

MAC 4, games 2, 4, 5, 6, 7, 12 and 13 could be used with learning disabled students in grades 5-9. Although the programs are motivating, careful monitoring will be required to make sure the students are able to do them. Games 1, 4, 6, 9, 10, 11, 14 and Bonus can be used effectively with gifted students in grades 4-5.

Games 1, 7, 9, 10, 11, 12 and 13 in MAC 5 can be used with LD and EMH students who are working at the grade 5 level in mathematics. All activities are suitable for gifted students in grades 5-6.

All games in MAC 6 are suitable for gifted students in grade 6; however, only games 1, 2, 4, 5, 7, 11, 12 and 13 are suitable for LD and EMH students working at a grade 6 level. Game 10 has too much flashing and is too distracting.

In MAC 7 games 4, 5, 6, 8A, 10 and 11 would be useful for reinforcing particular skills in a non-timed environment for learning disabled students in grades 7-9. The whole package is useful for promoting speed and accuracy to the gifted students in grades 7 and 8.

The MAC series is interesting, motivating and challenging. It lends itself extremely well to be used with gifted students. The teacher must choose the programs carefully for LD and EMH students.

The cost of each level of the program varies form $127.45 for MAC 1 to $177.00 for MAC 7.

MATH BLASTER (1983)

Subject	Mathematics
Topic	Whole number operations, reducing fractions, fraction/decimal/percent equivalency
Users	LD & EMH grades 4-9, minimal visual handicapped
Author	Davidson and Associates
Publisher	Davidson and Associates 3135 Kashiwa Street Torrance, CA 90505 Telephone: (213) 534-4070
Cost	$49.95 U.S. (1987)
Components	1 program disk, 1 data disk, teacher's guide (63p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, monitor, printer (optional), joystick (optional)
Other Formats	MacIntosh, IBM PC, Commodore 64/128

PROGRAM SUMMARY

The five programs contained on this disk are designed to provide drill and practice in addition, subtraction, multiplication and division of basic facts and fraction/decimal/percent equivalency. Each operation is subdivided into five levels of difficulty and each set contains four activities: a demonstration, two drills and practice routines, and an arcade type game. Sums range from 1 to 25, minuends from 8 to 20, multiplication facts from 1 x 1 to 12 x 12, and divisors from 1 to 12. A fifth program includes reducing fractions and renaming fractions as decimals, decimals as percents and percents as fractions. The data base contains over 600 problems.

The instructional technique used in this program is like an "electronic flashcard" which offers reinforcement of the skills but does not offer instruction. After a second attempt at a question the student is given the correct answer but no corrective feedback is provided. When students respond correctly, they are rewarded with sound and animated graphic reinforcements. Upon completion of a drill, the student is given the number of questions answered correctly, the total number of questions attempted, and the percentage score. The student is then given the opportunity to attempt the missed questions a second time. Since there is no teacher control of the sequence in this program, the teacher will need to monitor student work levels to ensure that appropriate levels are chosen. The emphasis in the arcade game is on speed.

The teacher's guide clearly outlines the program operation, the use of the editor function and provides an appendix listing all math questions contained in the program. The editor function, which allows the teachers to create their own files of questions, is easy to use and enables the material to meet individual needs more effectively.

Colour graphics are effective and are generated reasonably rapidly. Although a colour monitor is preferred, this program can be used with a monochrome monitor. The screen displays are clear with large text. Sound is optional.

SPECIAL EDUCATION APPLICATION

This program can be used effectively as motivational reinforcement for students who lack confidence in basic skills and fraction/decimal/percent equivalency. The editor function is a valuable part of this program. It allows the teacher to customize the program by creating new files for special needs students.

The ease of use, easy sequence, content scope at each level and the format used can readily become part of a totally integrated approach (visual, auditory and motor) for mastery of basic skills. Four sections of this program (excluding the Math Blaster game) can be very useful drill and practice for learning disabled, educable mentally handicapped, and the easier parts may be suitable for some trainable mentally handicapped students. Section 5 dealing with fraction/decimal/ percentage equivalency can be used by learning disabled students in junior high mathematics.

The game's emphasis on speed may be useful only for those students who have good speed and dexterity in handling visual, reasoning and quick motor skills simultaneously. It is unfortunate that the speed cannot be altered for slower students.

This program may be suitable for students who have minimal visual handicaps since the text is large and displays are clear.

MILLIKEN WORD PROCESSOR (1984)

Subject	Language Arts
Topic	Word processing
Users	Gifted grades 3 - 8, LD and EMH grades 4 - 9
Author	IOTA Inc., Suzanne Zemke & John Oberschelp
Publisher	Milliken Publishing Co. c/o BLM, P.O. Box 2249 175 Holiday Inn Dr. Cambridge, Ontario, N3C 3N4 (518) 658-4621
Cost	LRDC Buyer's Guide
Components	1 program disk with backup, 1 data disk, user's manual (50p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, monitor, printer
Other Formats	IBM PC

PROGRAM SUMMARY

This program is designed to provide an easy word processing system which allows students to concentrate on their thinking and composition skills rather than on handwriting and neatness.

Documentation creation is very straightforward and easy to learn. Document length restrictions are ample for elementary and junior high students. Commands are mnemonic and for the most part consist of single key entries. The restriction of 12 characters per file name proves very limiting and necessitates the use of abbreviations.

Editing functions are very easy to use as screen prompts guide the student through each step and a help screen is available at all times. The search function is weak in that the program will search only to the first occurrence of the word and each subsequent occurrence will be accessed one at a time. There is no automatic replace feature.

The file management effectively uses a drawing of a file cabinet for visual prompts and comparison, thus making the process of saving and deleting very easy to understand. Unfortunately, there is no direct means of renaming files; rather the file must be loaded into memory, saved under a different name, and the first file deleted. There is no password security in this program but additional copies of the File Cabinet disk can be purchased to allow each student to have an individual storage disk.

Printer specifications allow a choice of single, double or triple line spacing and a 5-space indentation using the TAB key. The absence of automatic centering of titles, right hand justification, and tabulation features are weaknesses. A pause feature in the printing process enables students to print one file immediately after another thus providing a longer document capacity. While this program lacks some of the features found in more sophisticated programs, the print function is easy to use.

The user's manual is clear, comprehensive and well-organized. The "Easy Does It" page summarizes the main commands and terminology for quick reference. The suggested student activities are designed to stimulate, develop and perfect writing skills.

SPECIAL EDUCATION APPLICATION

The use of visual and textual comparison functions to everyday writing tools (paper, file cabinet, etc.) makes this program easy to learn. Student options and procedures are clearly outlined on the screen.

This program would be appropriate for gifted and talented students in grades 3 to 8 to enhance the writing process by providing motivation to compose and write. Generating and organizing ideas also help to develop higher order thinking skills. In addition to using this program for language art activities, it can be applied to social studies and science. It can also be used to promote collaborative learning. The fact that multiple printing copies can be provided encourages students to share and discuss their work and ideas.

The program may also be used effectively with learning disabled and educable mentally handicapped students in grades 4 to 9. However, the teacher will need to

orient the students to this program and its uses. The use of small groups at the initial stages for brainstorming and pre-writing sessions can be very useful for those students who have difficulty generating ideas for stories, poems, etc. The use of a word processor instead of the usual handwritten format can be a very positive and motivating experience for students with poor penmanship skills. The neatly printed final product can build self-esteem which is lacking in many learning disabled students. Furthermore, the ease with which editing can be done will encourage revising of compositions, letters, stories, etc. since the whole thing does not have to be written over again. Hopefully, it will encourage some of the learning disabled language arts students to write more.

M-SS-NG L-NKS: CLASSICS, OLD AND NEW (1983)

Subject	Language Arts
Topics	Using structural clues to decipher passages from famous authors
Users	Gifted grades 4 - 7, LD grades 6 - 9 (limited use)
Author	Carol Chomsky & Judah Schwartz
Publisher	Sunburst Communications Box 3240, Station F Scarborough, Ontario MIW 9Z9 Telephone: 1-800-247-6756
Cost	$87.00 (1988)
Components	1 disk with backup, teacher's guide (6p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, monitor
Other Formats	IBM PC/PCjr, Commodore 64, Tandy 1000

PROGRAM SUMMARY

The objectives of this program are to help students to develop a sense of the author's style, to improve comprehension, to make inferences, to use context clues, to extend vocabulary, to improve sensitivity to grammar and punctuation, to recognize nuances of word meaning and to practice correct spelling.

The program uses a game format with 9 passages from 9 areas (81 passages in all). The passages are by authors such as Hemingway, Shakespeare, Twain, Huxley, Christie and others. They include the following broad areas: the sea, unreal worlds, humour, food, sounds, memories of childhood, limericks, mysteries and the human condition. Each passage can be presented in any of 9 formats with increasing levels of difficulty. The passages are presented with some letters and words missing and the object of the game is to complete the passages with the least number of tries.

The student may select or the teacher may preset the number of players (one or two), the topic, the passage, the format, the maximum number of guesses for each letter, the maximum number of guesses per turn for each player in the game version, and the use of sound in the program. The students may have one to five tries on a letter before the program provides the missing letter. If a student is having difficulty, he or she may move beyond the trouble point in order to gain some help from the context and then go back and complete the word.

The program is based on "learning by doing" concept and students are expected to use their existing reading comprehension skills to fill in the blanks. While many students will use context clues and develop their vocabularies while playing the games, the program does not provide help for weak readers. It is unfortunate that there are no hints or branches which would provide strategies to develop the reading and problem solving skills required to complete the blanks. Students with reading problems will require teacher assistance and may find some of the game formats too challenging.

Generally the displays are clear, well-spaced and easy to read; however, the displays become somewhat crowded when longer passages are used. The teacher documentation is well-organized and easy to follow. It contains complete technical and operating instructions, a copy of the passages available in the program, and student record sheets. The score report which indicates the number of blanks, the number of attempts, the number and percentage of correct responses, the number of incorrect responses, the number of letters supplied by the computer and an overall percentage can be reviewed during a game or upon completion of a puzzle. However, this information is not saved on the disk. There is no management system to save and maintain records for each student.

SPECIAL EDUCATION APPLICATION

This program is effective for gifted students in grades 4 to 7 who are reading at a grade 5 level. The interesting and challenging passages, the motivating game/puzzle format and the varying levels of difficulty, encourage students to practice strategies using context clues, extending vocabulary, recognizing nuances of word meaning, practicing correct sentence structure and correct spelling of words. However, the educational value of the last form which involves rewriting an author's work, letter by letter without clues, may

be questionable.

The format A which is the easiest level involving the insertion of vowels is appropriate for learning disabled students in grades 6 to 9 who are reading at least a grade 5 level. The teacher will need to monitor their progress closely since there are no hints or branching for help available in the program. The other levels will likely be too challenging.

M-SS-NG L-NKS: MICROENCYCLOPEDIA (1983)

Subject	Language Arts
Topics	Using structural clues to decipher passages in seven topics
Users	Gifted grades 4 - 7
Author	Carol Chomsky & Judah Schwartz
Publisher	Sunburst Communications Box 3240, Station F Scarborough, Ontario M1W 9Z9 Telephone: 1-800-247-6756
Cost	$87.00 (1988)
Components	1 disk with backup, teacher's guide (52p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, monitor
Other Formats	IBM PC/PCjr, Commodore 64, TRS-80 Models III/IV

PROGRAM SUMMARY

The objectives of this program are to help students to develop a sense of the author's style, to improve comprehension, to make inferences, to use context clues, to extend vocabulary, to improve sensitivity to grammar and punctuation, to recognize nuances of word meaning, and to practice correct spelling.

The program uses a game/puzzle format and includes 8 passages from 7 areas (56 passages in all). The passages include the following topics: ice-cream, bicycles, baseball, whales and sharks, elephants, airplanes and inventions. Each passage, which usually contains 40 to 70 words, can be presented in any of 9 formats with increasing levels of difficulty. The passages are presented with some letters and words missing and the object of the game is to complete the passages with the least number of tries. The content is intended for an American audience and this is reflected in the choice of passages. There is no authoring system to allow the teacher to modify or create content.

The student may select or the teacher may preset the number of players (one or two), the topic, the passage, the format, the maximum number of guesses for each letter, the maximum number of guesses per turn for each player in the game version, and the use of sound in the program. The students may have one to five tries on a letter before the program provides the missing letter. If a student is having difficulty, he or she may move beyond the trouble point in order to gain some help from the context and then go back and complete the word.

The program assumes a certain level of competency and provides practice in which students are expected to use their existing reading skills to complete the tasks. While many students will use context clues and develop their vocabularies while playing the games, the program does not provide help for weak readers. It is unfortunate that there are no hints or branches which would provide strategies to develop the reading and problem solving skills required to complete the blanks. Students with reading problems will require teacher assistance and may find some of the game formats too challenging.

Generally the displays are clear, well-spaced and easy to read; however, the displays become somewhat crowded when longer passages are used. The teacher documentation is well-organized and easy to follow. It contains complete technical and operating instructions, a copy of the passages available in the program and student record sheets. The score report which indicates the number of blanks, the number of attempts, the number and percentage of correct responses, the number of incorrect responses, the number of letters supplied by the computer and an overall percentage can be reviewed during a game. However, this information is not saved on the disk. There is no management system to save and maintain records for each student. The fact that students can't save incomplete assignments to be completed later is a drawback.

SPECIAL EDUCATION APPLICATION

This program is effective for gifted students in grades 4 to 7 who are reading at a grade 5 level. The interesting and challenging passages, the motivating game/puzzle format, and the varying levels of difficulty encourage students to practice strategies using context clues, extending vocabulary, recognizing nuance of word meaning, practicing correct sentence structure and correct spelling of words.

THE NEWSROOM (1984)

Subject	Language Arts
Topic	Designing, producing and printing a newspaper
Users	Gifted grades 3-9, LD grades 5-9, EMH grades 5-12
Author	None Cited
Publisher	Springboard Software Inc. 7808 Creekridge Circle Minneapolis, MN 55435 Telephone: (612) 944-3915 Cost $59.95 U.S. (1987)
Components	1 master program disk, 1 double-sided clip art disk, user's guide (105 p), quick reference guide
System Requirements	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, monitor, joystick or Koala Pad (optional), modem (optional); IBM PC/XT/AT, PC-DOS 2.0 or later, 256K, 1 disk drive, monitor, colour graphics card, printer, joystick or mouse (optional), modem (optional)
Other Formats	Commodore 64

PROGRAM SUMMARY

This program is designed to assist students in the production and printing of a school newspaper. This program may also be used to print letterhead, notices, announcements, banners and logos. The program offers six options:

1. BANNER - Used to produce titles and headlines.
2. PHOTO LAB - Adds clip art to textual material.
3. COPY DESK - Uses a word processor to write copy.
4. LAYOUT - Used to arrange the panels into an acceptable format.
5. WIRE SERVICE - Allows for the optional use of a modem.
6. PRINTING PRESS - Provides a hard copy.

The master disk contains 600 graphics (additional graphics can be added with the purchase of "Clip Art" collection) which can be flipped, enlarged or modified. Five fonts in three styles are available and can be printed in either large or small type size. The program uses picture icons which make the commands easy to remember. The graphic capabilities are excellent and offer a wide variety including cartoon formats which add interest and appeal. All banners, photos and panels which are created can be saved on a personal data disk for subsequent revision. A great deal of disk swapping is required in the final stages of the layout for printing.

SPECIAL EDUCATION APPLICATION

This interesting and motivating program can be used effectively by gifted and talented students from grades 3 to 9. They can use this program for a variety of purposes such as creating a school newspaper, preparing student profiles, developing topics in various subject areas on a theme through research, etc. This experience enables students to organize and synthesize their ideas both textually and visually in a way that they communicate the information to others. These assignments may make good use of brainstorming and encourage peer learning. This program can provide motivation for writing and editing. The students are able to learn to use the program very easily; however, the younger students will require some assistance in program operation in the initial stages of use. This program offers potential use with educable mentally handicapped students in grades 5-12. The students will develop skills in sequencing operations to achieve an end product as well as expressing themselves in simple sentences supported by visual representation. They, too, will benefit from the interaction with their peers. This program can serve as a tool to enhance a cooperative learning experience and enhance self-esteem by providing the students with a sense of pride in their finished printed copy. The EMH students can also make use of other functions in this program such as making notices and banners for the school for special events. The teacher will need to demonstrate the use of the program and provide simple instructions as how to use the main functions of the program. Learning disabled

students in grades 5-9 could benefit from using this program provided sufficient time is available. Using this program as a tool in a joint project between the specialist teacher and the classroom teacher could be valuable. Certainly the motivating learning experience would have positive effect for the LD students if a project is carefully planned.

MOPTOWN HOTEL (1983)

Subject	Problem Solving
Topic	Analogies, closed sequences, differences/uniqueness, negation, formulating & testing hypothesis, planning
Users	Gifted grades 1-3, LD grades 2-5, EMH grades 1-5
Author	Leslie Grimm & Pat Neu
Publisher	The Learning Company 545 Middlefield Road, Suite 170 Menlo Park, CA 94025-9968 Telephone: (415) 328-5410
Cost	LRDC $81.70 (1987)
Components	1 disk with backup, teacher guide (49p), black line master activity sheets
System Requirements	Apple II+/IIe/IIc/IIgs, 48K, 1 disk drive, colour monitor, joystick (optional).
Other Formats	IBM PC/PCjr, Atari, Commodore 64

PROGRAM SUMMARY

This program is designed to assist students to develop skills in recognizing analogies, completing closed sequences, identifying unique features, understanding negation, formulating and testing hypotheses, and planning. The disk contains seven progressively ordered games to develop logic skills:

1. WHO'S NEXT DOOR - The student is presented two figures and needs to identify the distinguishing trait in order to create the second member of another pair of figures differing in a similar manner to the first pair.
2. CHANGE ME - The student is given the first and fourth figure in a sequence of four figures along with a rule about the differences between the figures. The student must then create the middle two figures to complete the sequence.
3. SPOT ME - Given four figures, the student identifies what unique feature makes one different from the rest.
4. WHOSE BIRTHDAY - Using program feedback concerning what traits a particular figure does not have, the student uses the skill of interpreting negative comments to guess the figure being described.
5. SECRET PAL - A student formulates a hypothesis and tests it in order to attempt to identify a particular figure by guessing its attributes.
6. MOPTOWN MAP - Five figures are displayed on a 4 x 4 grid. The student must identify the locations of the remaining eleven figures by determining the two rules that figures in each row and column must obey.
7. MOPTOWN HOTEL - The players take turns in putting figures on a 4 x 4 grid by obeying rules indicating how many traits must differ between adjacent figures.

Each game gives the student the option of reading the directions. Although the instructions are explicit for the first five games, they are somewhat ambiguous for MOPTOWN MAP and MOPTOWN HOTEL and some initial assistance may be required. After completing a game, the student may play the same game or choose an alternate game. A set of five moppet playing cards which may be duplicated are available for group use.

The instructional technique, student interaction, graphics and colour are effective. However, more assistance with the negative feedback would be beneficial. The user can control the sound and the pace of the program. The games are motivating and can be used effectively to develop problem solving skills.

The school edition includes useful suggested activities which assist the teacher with implementation strategies for using the program in the classroom.

SPECIAL EDUCATION APPLICATION

Gifted students in grades 1 - 3 can use games 1, 2, 5, 6, and 7 to develop skills in recognizing analogies, completing closed sequences and other problem solving skills. Visual discrimination skills are part of most games. Games 3 and 4 may be more challenging. Grade 1 students will require assistance in reading the instructions.

This program is suitable for learning disabled students who are reading at least at a

grade 2 level. EMH students having a grade 2 reading level can use games 1 - 5 but they will likely need guidance and assistance in some of the games. A weakness noted in the program is that the feedback is provided but doesn't stay on the screen. Students experiencing memory problems may become frustrated by this.

This program does not allow the teacher to make changes in the program in order to make it more adaptable for individual student needs.

M-SS-NG L-NKS: YOUNG PEOPLE'S LITERATURE (1983)

Subject	Language Arts
Topics	Using structural clues to decipher passages from nine children's classics
Users	Gifted grades 3 - 6 , LD grades 5 - 9 (Limited use)
Author	Carol Chomsky & Judah Schwartz
Publisher	Sunburst Communications Box 3240, Station F Scarborough, Ontario M1W 9Z9 Telephone: 1-800-247-6756
Cost	$87.00 (1988)
Components	1 disk with backup, teacher's guide (52p)
System Requirements	Apple II+/IIe/IIgs, 48k, 1 disk drive, monitor
Other Formats	IBM PC/PCjr, Commodore 64, Tandy 1000, TRS-80 III/IV

PROGRAM SUMMARY

The objectives of this program are to help students to improve comprehension, to use context to build vocabulary, and to improve spelling.

This program uses a game/puzzle format and chooses nine passages from each of nine children's classics: *The Wind in the Willows, The Cricket in Times Square, The Lion, The Witch and the Wardrobe, The Secret Garden, The Mixed-up Files of Mrs. Basil E. Frankweiler, Shadow of a Bull, My Side of the Mountain, Charlie and the Chocolate Factory, and Little House in the Big Woods.* Each passage, which usually contains 50-70 words, can be presented in any of 9 formats with increasing levels of difficulty. The passages are presented with some letters and words missing and the object of the game is to complete the blanks in the passage with the least number of tries.

The student may select or the teacher may preset the number of players (one or two), the book, the passage, the format, the maximum number of guesses for each letter, the maximum number of guesses per turn for each player in the game version, and the use of sound in the program. The students may have one to five tries on a letter before the program provides the missing letter. If a student is having difficulty, he or she may move beyond the trouble point in order to gain some help from the context and then go back and complete the word.

The program is based on the "learning by doing" concept and students are expected to use their existing reading comprehension skills to fill in the blanks. While many students will use context clues and develop their vocabularies while doing the puzzles, the program does not help weak readers. It is unfortunate that the program does not provide more assistance in the form of hints or branches which would present strategies to develop the reading and problem solving skills required to complete the blanks. Students with reading problems will require teacher assistance and they may find some of the game formats too challenging.

Generally the displays are clear, well-spaced and easy to read; however, the displays become somewhat crowded when longer passages are used. The teacher documentation is well-organized and easy to follow. It contains complete technical and operating instructions, a copy of the passages available in the program, and student record sheets. Students can view their score report during a game or upon completion of a puzzle, but scores are not saved for review. There is no management system to save and maintain records for each student.

SPECIAL EDUCATION APPLICATION

This program is effective for gifted students in grades 3 to 6 who are reading at a grade 4 level. The interesting and challenging passages, the motivating game/puzzle format, and the varying levels of difficulty encourage students to practice strategies using context clues, extending vocabulary, recognizing nuances of word meanings, practicing correct sentence structure and correct spelling of words. This program may also be catalyst to influence student choices of literature. Although format H and I may be used in the development of long term memory retention they are not the best method to practice this, and have little educational value.

The formats A, B, C, D and E can be used discriminatively for learning disabled students in grades 5 - 9 who are reading at least at a grade 4 level and can handle formats without complete context. Teacher selection will be important in order to choose those passages which are appropriate for the students. The teacher will need to be skilled in integrating this program, e.g. using format A and B in assisting students to use the "close" process in reading. The teacher will need to monitor student progress closely since there are no hints or branching for help available in this program.

NUMBER FARM (1984)

Subject	Early Childhood, Mathematics
Topic	Numerical order, number recognition, keyboarding skills, problem solving
Users	Gifted Kindergarten, LD, EMH, TMH (limited use)
Author	Neosoft Inc.
Publisher	Developmental Learning Materials P.O. Box 4000, One DLM Park Allen, TX 75003 Telephone: (214) 248-6300
Cost	$29.95 U.S. (1986)
Components	1 disk, user's guide (10p), cue card (1)
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, colour monitor preferred
Other Format	IBM PC/PCjr, Commodore 64

PROGRAM SUMMARY

This program is designed to acquaint students with the concept of numbers, numerical order, recognition of numerals and number words, keyboarding skills and problem solving. The disk contains the following games:

1. NUMBER FARM - Students press any number from 1 to 9 and a corresponding number of animals appear on the screen.
2. OLD McDONALD - A portion of the tune "Old McDonald" is played and the corresponding lyrics appear at the top of the screen. When the song stops, the student counts the number of animals depicted on the screen and enters that number in order to finish the tune.
3. CROP COUNT - Students count the number of fruit and vegetable crops shown on the screen. This is a timed activity visually depicted by sunrise and sunset.
4. HEN HOUSE - Two players take turns guessing the number of eggs in the hen house. Clues are given for incorrect responses in the form of "less than" or "more than".
5. ANIMAL QUACKER - A variety of animals appear on the screen and make sounds. The student listens, counts the number of times the sound is repeated, and enters that number.
6. HORSESHOES - A number from 1 to 9 is depicted on the screen. Students activate the farmer's son to throw a corresponding number of horseshoes by pressing the space bar an appropriate number of times.

Optional textual instructions which must be read for the students and sound are available for each program. A cumulative score is presented at the end of each section of questions.

SPECIAL EDUCATION APPLICATION

This program provides interesting and motivating practice in developing arithmetic readiness, counting, number discrimination, number concepts and number words. Animated graphics provide excellent visual cueing and the colour adds to the interest and clarity. The program is easy to use; however, non-readers will need to have the instructions read for them when they first begin using the program. This program is appropriate for both learning disabled students and educable mentally handicapped students in the early development of number concepts. It is suggested that the activities be carried out sequentially for logical progression from number recognition to visual counting to audio counting and then problem solving. Visual clues are excellent and students should experience no difficulty once they are acquainted with program operation. Trainable mentally handicapped students may also use this program but will likely require assistance.

A PIECE OF CAKE (1983)

Subject	Mathematics
Topic	Addition, subtraction, multiplication and division of whole numbers
Users	LD grades 2-4;very limited use with special education students
Author	None Cited
Publisher	Spring board Software Inc. 7808 Creekridge Circle Minneapolis, MN 55435 Telephone: (612) 944-3915
Cost	$34.95 U.S. (1987)
Components	Disk, teacher's guide (6p.)
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, colour monitor
Other Formats	IBM PC, Atari, Commodore 64

PROGRAM SUMMARY

The disk contains five games designed to provide drill and practice to develop speed and accuracy in the recall of basic mathematics and facts:

1. THE BAKERY - Provides practice in basic addition and subtraction of numbers up to 20 using one- and two-digit numbers.
2. MULTICAKE - Provides multiplication practice of one-digit factors.
3. DIVIDACAKE - Provides division practice.
4. FLASHCARDS - Contains addition, subtraction, multiplication and division of whole numbers at various skill levels (beginner, learner, junior whiz, champion or supermath).
5. CATCHACAKE - Includes addition, subtraction, multiplication and division of whole numbers with speed emphasis at various skill levels.

Although different levels of difficulty are provided, the increments from one question to another are not always consistent and the increments are too large in some cases.

SPECIAL EDUCATION APPLICATION

This program can be used on a limited basis with learning disabled students in grades 2 - 4. The program is not as motivating and well designed as other available programs which are available. Furthermore, two of the games, FLASHCARDS and CATCHACAKE, have questionable use for learning disabled students. In FLASHCARDS, the left to right entry of answers when dealing with calculations involving two or more digits is not a satisfactory approach and may inculcate bad habits. The timed responses required in CATCHACAKE with no provision to change the speed may be frustrating to the student.

The lack of an authoring system, no management system, no ability to disable sound and the inability to change speed in one of the games are all weaknesses.

This program is not one that would be particularly effective with special needs students.

READER RABBIT (1984)

Subject	Language Arts
Topic	Identifying letters, sorting letters into words, sequencing words, sequencing words according to a rule
Users	LD grades 1 - 3, TMH, EMH, Visually Impaired
Author	Leslie Grimm
Publisher	The Learning Company 545 Middlefield Road, Suite 70, Menlo Park, CA 94025-9968 Telephone: (415) 328-5410
Cost	$39.95 U.S. (1986)
Components	1 disk, teacher guide (36p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, colour monitor preferred, joystick or touch tablet (optional)
Other Formats	IBM PC/PCjr, Commodore 64

PROGRAM SUMMARY

This program is designed to assist students to identify letters and locate beginning, middle and ending letters in consonant-vowel-consonant patterns; use logic to unscramble letters to make words compare words that differ by one letter to a given word; and match pictures, words, and parts of words from memory.

This program consists of four games that are intended to help develop reading skills:

1. SORTER - This game requires the student to match words to a target pattern shown at the top of the screen. The concepts and skills involve identifying unfamiliar letters, gaining speed in recognizing letters, locating beginning, middle, and ending letters and recognizing spelling patterns.
2. LABELER - Students are required to unscramble letters to spell words that name pictures. The concepts and skills used are in locating letters in their beginning, middle and ending locations in c-v-c words, developing spelling skills, associating words with pictures and noticing middle vowel locations in c-v-c words.
3. WORD TRAIN - Students load a train with words that differ by one letter from the preceding word. The students are expected to use logic to sequence words by holding two variables (letters) while the third changes.
4. MATCH UP - This is a memory card game which matches pictures, words and parts of words. It is intended to improve spatial awareness (up/down, left/right) and to improve the ability to concentrate and remember.

The first three games increase in difficulty and should be used in order. Each game uses over 200 three-letter words and builds on the skill from the preceding game. The MATCH UP game can be played at any time. It has six different options with the first being the easiest.

The program is an excellent motivator and can be used effectively to reinforce teacher taught concepts and skills. The use of colour, sound and animation greatly enhances the program. The program provides sufficient practice and the variations of traditional match up games are excellent. The documentation is comprehensive and easy to follow. The ability of the teacher to select picture word sets is a definite strength when using this program with special needs students.

SPECIAL EDUCATION APPLICATION

This software is adaptable in terms of content switching, activity sequence, speed, and peripheral inputting devices; however, the slowest of the three speeds available in the first game may still be too fast for some beginning students. Custom data may not be added to the program by the teacher even though picture words sets may be selected.

TMH and EMH students requiring assistance in beginning reading skills such as identifying letters, improving spatial awareness and improving concentration and memory will find this program helpful. This will apply to students dealing with concepts of the primary grades. The animated graphics, colour and sound will help sustain student attention and motivation. This program can also be used with learning disabled students, especially for those requiring spatial awareness and improvement in memory and concentration skills. The use of large letters and highlighting of displays will assist visually impaired students.

ROCKY'S BOOTS (1982)

Subject	Problem Solving
Topic	Reasoning skills, Electronic circuitry
Users	Gifted grades 4-9, LD grades 5-8 (limited use)
Author	Warren Robinett and Leslie Grimm
Publisher	The Learning Company c/o Addison Wesley, Box 580 26 Prince Andrew Place Don Mills, Ontario M3C 2T8 Telephone: (416) 447-5101
Cost	$110.20 (1987)
Components	1 disk with back up, teacher guide (44p), activity sheets (49p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, colour monitor preferred, joystick (optional), IBM PC/PCjr, 128k, 1 disk drive, colour monitor, joystick (optional)
Other Formats	Atari, Commodore 64

PROGRAM SUMMARY

This program is designed to assist students in logically analyzing and building simple electronic circuits using components that are commonly found in digital computers. This program, using a game format, has six parts:

1. HOW TO MOVE - Instruction is provided in 4-directional cursor movement and how to pick up and drop objects.
2. BUILDING MACHINES - This part provides an introduction to the use of wires, sensors and clackers to build a simple electrical circuit.
3. LOGIC GATES - This illustrates the control of electrical current flow through AND, OR and NOT logic states.
4. ROCKY'S BOOTS - This part deals with the construction of a machine to conform to on-screen suggestions of expected output.
5. FLIP-FLOPS - More complex electronic machines are constructed using flip-flops, clocks and delays.
6. ROCKY'S CHALLENGE - This part creates a variety of electronic machines with differing complexity in Rocky Raccoon's fifteen challenge rooms.

Optional practice sessions are available in each section. It is suggested that the programs be followed in order since they become progressively more challenging. The reading level in this program is at least grade 3 but the content is generally at a grade 5 or 6 level or higher. Students may require assistance with some of the terminology such as oscillator, throbulator, etc. This program may be used for developing logic, problem solving skills and science enrichment.

There is a high degree of student interaction in this program. The technical design, using colour, sound and animation, makes this program more appropriate for elementary students, but the content requires good reading ability and attention span. Teacher assistance will likely be required with grade 4 students, especially in the initial use of the program.

The educational version of this program provides valuable suggested activities for use in the classroom. Black line masters for on-line and off-line activities add strength to the program.

SPECIAL EDUCATION APPLICATION

This is a creative and challenging program for gifted and talented students in grades 4 - 9. The students, using deductive reasoning, learn about electronic circuitry by building animated logic machines. However, the teacher will have to provide some assistance for the younger students. Demonstrations of the program using a large monitor would be an effective approach to assist young students. The graphics are excellent and the game format is interesting and motivating. Students using this program require good manual dexterity.

Learning disabled students in grades 5 - 8 may benefit from the first two programs but will likely find the others too challenging, unless they have a particular aptitude in mathematics and science.

SAFARI SEARCH (1985)

Subject	Problem Solving
Topic	Developing problem solving skills by deciphering clues hidden in a grid
Users	Gifted grades 3-8, LD 3-9, EMH 3-9
Author	Dr. Thomas C. O'Brien
Publisher	Sunburst Communications Box 3240, Station F Scarborough, Ontario M1W 9Z9 Telephone: 1-800-247-6756
Cost	$87.00 (1988)
Components	1 disk with back up, teachers guide (34p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, monitor
Other Formats	IBM PC/PCjr, Tandy 1000

PROGRAM SUMMARY

This program is designed to assist students to develop complex mathematical thinking by collecting, organizing, analyzing and using the information to solve problems. The program also encourages collaborative learning in an interesting and motivating way.

The program consists of twelve search games on a 5 x 5 "Safari" grid: the first six deal with the player finding one animal in the grid; the others involve finding two animals. Various problem solving strategies are used which increase in difficulty and involve making inferences, inventing tactics, collecting data and organizing information. Students must not only collect information but also judge the importance of the information and weave it in with previous data. The easiest activity uses random guessing while all other activities involve problem solving tactics using clues such as: hot/warm/cold, rectilinear distances, whether or not the object can be seen from the current location, and the direction the animal is from the current location. Each game generally takes from two to ten minutes depending upon the game and the age of the user. Collaborative work (two or three students working together) is encouraged.

This package has effective sequential development beginning with very easy games and progressing to very difficult ones. Instructions are clear and consise; however, younger students may need some assistance when they first use the program. Opportunities for student interaction is very good and encourages students to try various methods to develop problem solving strategies. This program can be used effectively with small groups. Graphics and colour are used effectively, but the program can also be used on a monochrome monitor. It is unfortunate that sound cannot be disabled when using the program within the classroom. Teacher documentation contains sufficient information for easy use on an individual or small group basis. No management system is included. The content of the program cannot be modified.

SPECIAL EDUCATION APPLICATION

The program is appropriate for gifted and talented students in grades 3 to 7. The motivating and challenging format encourages the development of logical and inductive thinking skills. The instructional design actively involves the student and encourages collaborative learning. The program provides the student with an excellent medium for experimenting to develop and test problem solving strategies. The program encourages students to use different approaches to achieve a desired result. The program offers good user control and is easy to use.

The program is also appropriate for learning disabled students and educable mentally handicapped students in grades 3 to 9. The effective sequential development, the ease of use, the motivating game format, and the available repetition within each level makes this program very helpful for this target audience. It provides opportunity for a great deal of experimentation and encourages peer learning. The teacher will need to monitor progress to ensure that the students are trying appropriate strategies and are not becoming frustrated, especially at the most difficult levels. The game type format makes this program a good motivational tool and provides an interesting approach to develop problem solving strategies.

SPECTRUM (1984)

Subject	Problem Solving, Computer Literacy
Topic	Discovery patterns, programming logic, skills in writing computer programs
Users	Gifted grades 5-9
Author	Stephen Shalom
Publisher	Sunburst Communications Box 3240, Station F Scarborough, Ontario M1W 9Z9 Telephone: 1-800-247-6756
Cost	$87.00 (1988)
Components	1 disk with backup, teacher's guide (34p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, colour monitor (optional)
Other Formats	Available in Apple formats only

PROGRAM SUMMARY

This program is designed to assist students to find order and discover patterns, to practice following the logic of simple programs and to build skills in writing simple computer programs.

This disk contains two programs:

1. PLAY A GAME - the student, playing at one of nine difficulty levels, attempts to determine a hidden pattern of bars of either colours or shapes with as few clues as possible. Once the student has discovered the pattern, he or she attempts to match it either by listing the pattern bar by bar or by writing a pattern generating program.
2. CREATE A PATTERN - This program allows the student to write a hidden program or pattern for practice or to challenge other players. An "Instruction" program is available and should be viewed first. Each game can be played individually or in small groups. The activities on this disk promote the development of logic and inductive reasoning. Once the student has successfully described the hidden pattern, the program will display the student's program alongside the shortest possible program that will generate the pattern. Up to four players may participate in this game.

The manipulation of patterns and programs promotes the inquiry method of thinking and develops pattern recognition and logical thinking skills. The fact that teachers can custom tailor the level of difficulty to the needs of the users is a definite strength although some teacher time is required.

Generally the technical quality of the program is good, and graphics, colour and sound (optional) are used effectively. The program makes excellent use of the computer's ability to generate random patterns; however, the program generator is slow to produce a pattern at the advanced level of difficulty. The teacher documentation is thorough, well-organized and easy to follow.

SPECIAL EDUCATION APPLICATION

SPECTRUM is an excellent program for developing critical thinking skills and is appropriate for gifted students in grades 5-9. It develops pattern recognition, logic, inductive reasoning and program writing skills, and allows students to predict patterns, to test their hypotheses, and to experiment with different ways of describing patterns.

SPELL IT! (1984)

Subject	Language Arts
Topic	Review of spelling rules, provision of a format for learning to spell new words
Users	Gifted grades 3-7, LD and EMH (Reading level grade 4+)
Author	Janice Davidson and Richard Eckert
Publisher	Davidson and Associates 3135 Kashiwa Street Torrance, CA 90505 Telephone: (213) 534-4070
Cost	$49.95 US (1987)
Components	1 program disk, 1 data disk, teacher's guide (65p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, monitor, printer (optional) joystick (optional)
Other Formats	IBM PC, Commodore 64/128 Atari

PROGRAM SUMMARY

This program consists of four activities which review spelling rules, study the words in syllables, use the words in sentences, and help distinguish correctly spelled words from misspelled ones. The program focuses on 1,000 most commonly misspelled words grouped into five levels beginning with the Novice and extending to the Grand Master level. Within each level, there are ten sets of twenty words which increase in difficulty. The editor allows the teacher to create word lists for all activities.
The four activities are:

1. SEE IT - A whole word is presented and then it is syllabicated. A sentence with a missing word appears. Once the student knows how to spell the word, the space bar is pressed, the words and syllables disappear and the student types the word into the blank.
2. PRACTICE IT - A spelling word appears briefly (display time may vary from 0.25 to 5 seconds) and the student is expected to type the word correctly in the sentence. The word should appear on the screen just long enough for the student to recognize the word.
3. UNSCRAMBLE IT - This is a game for one or two players. The student chooses one of nine boxes and the scrambled letters that belong in the box appear at the top of the screen. Students earn points for each word which is successfully unscrambled.
4. SPELL IT! - This is an arcade type game which is played individually at one of three speeds. The student aims a frog at one of four spellings of the same words using arrow keys or a joystick The object of the game is to zap as many correct words as possible within the time limit.

At the conclusion of the SEE IT and PRACTICE IT activities, the student has the option of retaking any word missed. An optional on-screen demonstration of the activities is available. There are no pre- or post-tests and no management system in this program.

SPECIAL EDUCATION APPLICATION

The program can be used effectively with learning disabled and educable mentally handicapped students working up to the grade 9 level provided they have an independent reading level of grade 4. It provides sufficient repetition of spelling activities and uses a variety of game formats, colour and graphics to effectively add interest and motivation to the learning process. The program is also very easy to use. This program helps make spelling less tedious and integrates it more into sentence structure and sentence usage. It also develops visual discrimination and memory.

The editor function is a valuable part of this program. It allows the teacher to customize the program by modifying the content for special needs students; however, teacher time will be required to do this task effectively.

Gifted students from grades 3 - 7 can make effective use of this program as it is. However, it can be enhanced by using the editor function.

This program may be suitable for students who have minimal visual handicaps since an option provides the use of bold-faced fonts.

STICKYBEAR MATH I (1984)

Subject	Mathematics
Topic	Addition and subtraction
Users	Gifted grades 1-4, LD and EMH grades 1-5, TMH
Author	Richard Hefter and Susan Dubicki
Publisher	Field Publications (formerly weekly Reader Family Software) 245 Long Hill Road Middletown, CT 06457 Telephone: (203) 638-2400
Cost	$39.95 US (1987)
Components	1 disk, parent's guide (16p), 1 Stickybear poster, Stickybear stickers
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, monitor
Other Formats	Commodore 64

PROGRAM SUMMARY

This program is designed to provide drill and practice in basic addition and subtraction skills at twenty levels of difficulty. The lowest levels begin with the use of animated objects and numbers of less than five, and can be viewed in either horizontal or vertical format. The advanced levels progress through missing addends and subtrahends to four-place addition involving multiple carrying ,and three place subtraction involving multiple borrowing. It is unfortunate that borrowing and carrying numbers is not shown.

The questions used in this program are randomized well within each level of difficulty. The teacher can set the starting level of difficulty as well as the number of tries (1-4) before the correct answer is given. Once into the program, the level of difficulty is adjusted upward or downward depending upon the degree of success that the student is experiencing. Stickybear's progress toward overcoming an obstacle is reviewed periodically throughout the drill and is completed graphically after about 25 questions have been answered correctly. The animated feedback at the lower levels is good but it is not incorporated at the higher levels. Quantitative feedback provides the entry and end levels, the total number of questions attempted, the total number and the percentage of the correct answers. The lack of corrective feedback is a weakness, but this is compensated somewhat by the difficulty level being automatically adjusted by the program.

The program makes good use of graphics and is easy to use. Sound can be disabled, but it also provides positive feedback at the higher levels. There is no provision for any modification of the program by the teacher. The simple management system allows the teacher to select the number of tries, level of difficulty, addition questions, subtraction questions, missing addends, column addition/subtraction, and multiples addends. It also allows the teacher to see a progress report of the last session for up to 25 students.

SPECIAL EDUCATION APPLICATION

The program is suitable for learning disabled and educable mentally handicapped students from grades 1-5. It provides good drill and practice in addition and subtraction skills and can be used effectively after the teacher has introduced the concepts in a concrete way. The variety of difficulty levels provides flexibility in using this program to meet specific needs. The numerous repetitions and the endless patience of the computer can assist the student to not only improve the skills but also build self-confidence. Although some older EMH students could profit from the content, the graphics may be somewhat immature. The easier levels of this program may also be used effectively with trainable mentally handicapped students, particularly with the animated feedback which is provided.

This program may also be useful for gifted students in grades 1-4 since there are so many levels of difficulty.

STICKYBEAR NUMBERS (1982)

Subject	Mathematics, Early Childhood
Topic	Counting
Users	Not suggested for use with special needs students
Author	Richard Hefter, Janie and Steve Worthington
Publisher	Field Publications (formerly Weekly Reader FAmily Software) 245 Long Hill Road Middletown, CT 06457 Telephone: (203) 638-2400
Cost	$39.95 US (1985)
Components	1 disk, teacher's guide (4p), look book, poster, stickers
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, colour monitor preferred
Other Formats	Commodore 64, Atari, IBM

PROGRAM SUMMARY

This program is designed to reinforce counting and number recognition, stimulate observation, experimentation and exploration and to provide children with a positive experience with computers.

When a student depresses any number from 0 to 9, the computer generates an animated display, accompanied by sound, of the number of objects. If the space bar is pressed, one object will disappear and the number portrayed will decrease by one. This process can be continued until the screen is cleared of objects. The space bar can similarly be used to count from zero to nine. The depression of another number key begins the process again. No quantitative feedback or information is provided as to how the student is progressing.

Student interaction is easy but it is difficulty to determine whether any meaningful learning is taking place. The high resolution, coloured animated graphics and sound add to the interest and motivation of the students. A colour monitor is preferred but is not essential. There is no provision for any modification of the program by the teacher, and no record keeping systems is included.

SPECIAL EDUCATION APPLICATION

The content of this program is appropriate for young trainable mentally handicapped students (ages 5-7). However, the reviewer felt that it would be more effective to use concrete objects in the child's "real" world and manipulatives to assist the student in counting rather than using the computer program. Although the animated coloured graphics are appealing, the program would become somewhat monotonous after repeated use. The sound which cannot be disabled may become annoying in a classroom setting.

STICKYBEAR OPPOSITES (1983)

Subject	Language Arts, Early Childhood
Topic	Opposites
Users	K-2, LD, EMH, TMH, Speech and Language Impaired, Minimal Visually Impaired
Author	Richard Hefter
Publisher	Field Publications (formerly Weekly Reader Family Software) 245 Long Hill Road Middletown, CT 06457 Telephone: (203) 638-2400
Cost	$39.95 US (1985)
Components	1 disk, teacher's guide (4p), book, poster, stickers
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, colour monitor preferred, game paddles (optional)
Other Formats	Atari 600/800, Commodore 64/128

PROGRAM SUMMARY

This program is designed to introduce and reinforce the concept of opposites and familiarize young children with the computer.

The program uses high resolution, coloured animated graphics and sound to portray twenty-three pairs of activities in an interesting and motivating manner. Colour enhances the program but is not essential. The student interacts with the program by using paddles or by pressing the space bar to activate a new set of opposites, and by using the left or right arrow key, the numbers 1 and 2 or the letters "O" and "P" to produce the companion opposite such as a car moving forward or backward, a seesaw going up and down, etc. Each display has a name such as "high" or "low", "short" or "tall", etc. The animation effectively illustrates the concept of opposites even though younger children may not be able to read the words. The student controls the rate and amount in this program.

User support materials consist of a hard cover book, a poster, and eight stickers to help reinforce the concept of opposites. There is no provision in this program for the teacher to set the number of questions or to modify the content. No record keeping system is included in the program.

SPECIAL EDUCATION APPLICATION

The program assists students in moving from the concrete to abstract conceptualization of opposites. The animated graphics, colour and sound are effective in assisting the students to understand the differences. The program is highly motivating, easy to use and sustains interest. This program can be used effectively in kindergarten to grade 2, as well as learning disabled, educable mentally handicapped students and trainable mentally handicapped students who are having difficulty understanding the concept of opposites. This program could also be very helpful with children experiencing language delays. The large lettering would also make this program appropriate for minimally visually impaired students.

This program is excellent for demonstration purposes with small groups. This approach provides the use of expressive language in describing the screens and what is happening.

STICKYBEAR SHAPES (1983)

Subject	Mathematics, Early Childhood
Topic	Geometric Shapes
Users	Gifted pre-school and kindergarten, LD grade 1, EMH grades 1-2
Author	Richard Hefter, Janie and Steve Worthington
Publisher	Field Publications (formerly Weekly Reader Family Software) 245 Long Hill Road Middletown, CT 06457 Telephone: (203) 638-2400
Cost	$39.95 US (1985)
Components	1 disk, teacher's guide (4p), shapes book, poster, stickers
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, colour monitor preferred, game paddles (optional)
Other Formats	Commodore, Atari

PROGRAM SUMMARY

This program is designed to identify and reinforce the recognition of five common geometrics forms: circle, square, triangle, rectangle and diamond.
The program consists of three games:

1. PICK IT - Each picture display contains a missing shape. Students choose one of the five shapes displayed at the bottom of the screen in order to complete the picture.
2. NAME IT - The student must choose one shape from five which matches the name of the shape displayed.
3. FIND IT - Using arrow keys, the student matches a sample shape presented at the bottom of the screen with a corresponding shape displayed in an array at the top of the screen.

PICK IT and FIND IT provide practice recognizing the shapes in cartoon-like pictures of life settings. This assists students to realize that shapes are a part of their environment. However, it is important that students have experience with concrete objects and manipulatives before they use this program. In NAME IT, some students will likely need to have the shape names read for them.

Student interaction is easy and encourages learning by discovery and experimentation. Some students may find the game paddles easier to use than the keys. Feedback is immediate but it does not provide any corrective assistance; it merely indicates right or wrong. However, if the response is correct, the picture becomes animated and music or sound effects are heard. An incorrect response results in a "bloop" sound. The high resolution coloured animated graphics and lively sound add effectively to the interest and motivation of the students. A colour monitor is preferred but is not essential.

The colorful hard cover book and a poster of shapes are useful for discussing and reinforcing the recognition of shapes. There is no provision for any modification of the program by the teacher. No record keeping system is included in the program.

SPECIAL EDUCATION APPLICATION

The program can be useful to reinforce shape recognition, left-right directionality, visual closure and figure ground skills with learning disabled and educable mentally handicapped students in grades 1-2. This program assists students in moving from the concrete to abstract conceptualization of shapes. The fact that environmental surroundings which are familiar to the student are used in the graphics assists in the transition. The high resolution animated graphics, colour and sound are effective in assisting the students to explore and discover the shapes. The program is highly motivating, easy to use and sustains interest. This program may also be suitable for primary trainable mentally handicapped students; however, the teacher must read the shape names and make sure that there is not too much on the screen to become distracting.

This program can also be used effectively with gifted pre-school and kindergarten youngsters.

THE SUPER FACTORY (1986)

Subject	Problem Solving, Mathematics
Topic	Manipulating three dimensional objects, duplicating pictures on the faces of a cube
Users	Gifted grades 5-9, LD grades 7-9
Author	Mike Fish and Marg Kosel
Publisher	Sunburst Communications Box 3240, Station. F Scarborough, Ontario, M1W 9Z9 Telephone: 1-800-247-6756
Cost	$87.00 (1986)
Components	1 disk with back up, teacher's guide (48p)
System Requirements	Apple II+/IIe/IIc/IIgs, 64k, 1 disk drive, monitor
Other Formats	IBM PC/PCjr, Tandy 1000

PROGRAM SUMMARY

This program promotes the development of strategies to solve three-dimensional problems. It includes analyzing a process, looking for a sequence, working backwards, and analyzing creativity. It also involves spatial perception, visual reasoning and rotation. The program consists of the following three sections:

1. RESEARCH - allows the student to experiment with a cube and become familiar with the mechanics of the program.
2. DESIGN - allows the student to build cubes at a more advanced level. Students design a plan to create a cube consisting of pictures and rotations in which the pictures do not appear until the plan has been executed.
3. CHALLENGE - offers four levels of difficulty (easy, medium, hard and super) in which the student is asked to duplicate the challenge cube which has pictures on two of its six faces by analyzing, planning and checking the plan against the challenge cube. The fifth level, Challenger, presents cubes from a maximum of twenty which the teacher or students have saved from the design level.

Excellent sequencing in this program provides the student with ample opportunity to explore, manipulate and investigate the properties of a cube. Effective explanations and solutions for the challenge routines are provided. An option is provided for changing the pictures to simple geometric designs and thus makes this program suitable for a wide range of learning abilities.

The instructional and technical design are both effective with graphics adding an important dimension to the learning process. The program is easy to learn and use. However, it is noted that grade 4 (FRY) reading level is recommended for students using this program. No management system or record keeping system is provided. The teacher documentation provides effective teaching suggestions for preparing students to use the program. The guide is well-organized and easy to follow. User support materials are effective and help develop problem solving strategies through activity sheets.

SPECIAL EDUCATION APPLICATION

The program is appropriate for gifted and talented students in grades 5-9. The instructional design actively involves the student and is motivating and challenging. This program provides the student with an excellent medium for experimenting with a three-dimensional figure (a cube) to develop problem solving strategies of analyzing, planning, implementing a plan and checking it out. It reinforces spatial perception, visual reasoning and rotation. Students can also create cubes of their own. The program offers good user control and is easy to use.

The program also offers potential use for junior high learning disabled students. It provides a great deal of visual manipulation and experimentation with cubes. Some of the "hard" and "super" activities may be too difficult, but most of the other activities will be very useful in providing a different approach to a learning experience involving problem solving.

SUPERKEY (1985)

Subject	Computer Literacy, Language Arts
Topic	Keyboarding
Users	Gifted grades 3-6, LD grades 5-9, IOP Jr and Sr High
Author	Bytes of Learning
Publisher	Bytes of Learning c/o Scholastic Inc. 123 Newkirk Road Richmond Hill, Ontario, L4C 3G5 Telephone: (416) 883-5300
Cost	$69.95 (1987)
Components	1 disk with back up, teacher's manual (44p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, monitor
Other Formats	Available only in Apple Format

PROGRAM SUMMARY

SUPERKEY is a tutorial/drill and practice program designed to teach students basic touch keyboarding on a QWERTY keyboard. It offers four options:

1. POSTURE - Correct hand and body posture are graphically modelled. Pictorial reminders of proper posture occur throughout the program.
2. FINGER NAMES - Home row position is modelled together with proper thumb control of the space bar. Students have unlimited practice reviewing these fingering patterns.
3. LESSONS - The alphabetic, punctuation, return and shift keys are presented in 10 lessons (3 new keys per lesson). In each lesson, correct fingering is modelled, three lines of drill on the new key in relation to home row keys are offered, new letters are practiced via three lines of word combinations, and finally, three sentences are offered involving words using the new letter. Exercises in any of the four lesson parts can be repeated at the user's discretion.
4. SKILL CHECK - Students can do speed/accuracy checks related to any of the 10 lessons, or they can check their speed on material of their own choosing by electing "Open Screen". Practice paragraphs are also provided in the manual. Feedback provides the student with highlighted errors and suggestions for improvement.

The novice user should follow the program in the sequence in which it was designed. The content is appropriate in that it offers modelling of proper finger movement, guided practice using successively more difficult drills and independent practice. Each lesson will take about twenty minutes.

The graphics are clear and provide excellent models. Limited use is made of colour and this program may be used effectively on a monochrome monitor. The whole program loads on booting and thus eliminates delays due to disk interaction. A student record keeping system is provided, but the inclusion of a disk management system would enhance the program. This user-controlled program is easy to use and teaches keyboarding skills in an interesting way.

SPECIAL EDUCATION APPLICATION

Keyboarding skills will allow students to interface efficiently with microcomputers in an educational and/or future employment setting. When using the word processor in the writing process, it is important that the users express their thoughts in a continuous flow. Therefore, the efficiency with which the student inputs text becomes very important.

The program can be used effectively with gifted students in Junior and Senior High School. The importance of introducing keyboarding skills is for the purpose of enabling the students to become proficient users of word processing and all the activities related to it. The program should not be used just for the sake of keyboarding. Since keyboarding is a psychomotor skill, students with very poor manual dexterity may become very frustrated. However, the added practice may help to improve poor eye-hand coordination.

TEDDY'S PLAYGROUND (1985)

Subject	Problem Solving
Topic	Discriminating between colours and shapes
Users	LD grades 2-4, EMH 2-5
Author	Donna Stanger & Lon Koenig
Publisher	Sunburst Publications Box 3240, Station F Scarborough, Ontario M1W 9Z9 Telephone: 1-800-247-6756
Cost	$87.00 (1988)
Components	1 disk with back up, teacher's guide (60p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, colour monitor; joystick, Apple Mouse or Muppet Learning keys (optional)
Other Formats	Available only in Apple Format

PROGRAM SUMMARY

This program is designed to promote the recognition of critical and variable attributes in the formation of both concrete and abstract concepts. The program provides specific practice in recognizing changes in attributes, manipulating attributes, sorting attributes, and using attributes to complete analogies.

The program provides a problem solving environment in which students must recognize attributes to play games. The attributes of shape, colour and shading are incorporated into three game settings:

1. SLIDE - The student is required to select three shapes that are different in only one attribute from one shape to the next. There are two levels of difficulty within the first slide game. Successful completion of the two levels allows the students to progress to the "Big Slide" game and the "Bumpy Slide" game which present more difficult problems dealing with changes in attributes within a sequence of shapes.
2. SEE-SAW - The student organizes shapes according to one kind of attribute. Successful completion of the first level of play allows the student to continue to the second level containing more difficult problems.
3. SWING - These games are picture sentences that form analogies involving the comparison of changes in attributes. Success with the first game allows the student to move on to the second game which contains more difficult analogies.

The content is sequentially developed beginning with simple concepts and progressing to more difficult ones. The instructional format is motivational and the technical quality is good. Colour, sound and graphics are used effectively to provide motivation and an interesting learning experience. Colour is essential in this program. The teacher documentation provides a well-developed set of lesson plans and activities which contribute to the ease of use and implementation of this program in the classroom.

SPECIAL EDUCATION APPLICATION

This program is appropriate for learning disabled students in grades 2-4 and educable mentally handicapped students in grades 2-5 to practice sorting by attributes and developing visual discrimination skills in an interesting and motivating manner. The sequence development from easy to difficult and user control are appropriate for this target audience. The concepts should be explored with the students before using the computer program. Teachers should spend time with the students, especially the younger ones, on program operation, the use of input devices, and entering the responses to the problems. Instructions on the disk may have to be read by the teacher since the reading level may be too difficult for students. It is noted that the movement of shapes is somewhat awkward the shapes must be placed in the exact position for the answer to be accepted as a correct response. The game type format makes this program a good motivational tool and provides an interesting approach to developing some of the primary problem solving skills.

TONK IN THE LAND OF BUDDY-BOTS (1985)

Subject	Problem Solving
Topic	Shape and pattern recognition, memory, critical thinking, decision making, map reading
Users	Gifted grades K-3, LD Grades 2-4
Author	Mercer Mayer
Publisher	Mindscape Inc. 3444 Dundee Road Northbrook, Il. 60062 Telephone: (312) 480-7667
Cost	$49.95 U.S. (1986)
Components	1 disk with back up, teacher's guide (16p), user's guide (42p)
System Requirements	Apple II+/IIe/IIc/IIgs, 64k, 1 disk drive, colour monitor required, joystic (optional)
Other Formats	Commodore 64, Atari

PROGRAM SUMMARY

This program consists of five educational games, one "just for fun" activity and a series of adventures. Each game gives opportunity to practice one or more of the following skills: shape and pattern recognition, concentration/memory, and critical thinking/strategy. Each game revolves around "Buddy-Bots" or "Minibots", robot-like creatures which are composed of different combinations of many different heads, torsos and legs. Each game contains four different levels of difficulty. The games are:

1. DIFFERENT/ALIKE - Students identify which minibot is different from six minibots on the screen.
2. MATCH THE SHADOW - Students identify which of 4,6,8, or 10 outlines will match the identified minibot.
3. MINIBOT SHUFFLE - A minibot is placed inside one of three boxes which are shuffled around. The student must identify where the minibot is after specific number of moves.
4. REMEMBER ME - The student looks at a picture of a Buddy-Bot and attempts to recreate it from memory.
5. BUDDY-BOT PUZZLE - A Buddy-Bot is shown and the student attempts to put its nine components together in the right order.

MINIBOT FACTORY is a "just for fun" activity which allows the students to build their own minibots. In the adventure, the student (Tonk) attempts to find the missing pieces of a Buddy-Bot which are scattered all over the land. A map is provided to guide the student to collect missing pieces or enter a cave to play one of the above games. There are four levels of difficulty in the adventure and the level determines how many pieces the student must assemble to win.

The teacher should spend some time with the students to introduce them to the program before using it. Non-readers may have difficulty with both the cues and the feedback. Some students will also experience difficulty with the map to screen relationship in the adventure.

Animated graphics and colour are used effectively in this program. Sound is optional. The documentation is concise and easy to use It is unfortunate that a management system is not included to keep track of student scores and perhaps the type of errors. Score sheets are provided to be completed for each student.

SPECIAL EDUCATION APPLICATION

The motivational approach using colour and animated graphics to assist students to reinforce visual discrimination, visual memory and patterning, problem solving and thinking skills in an enjoyable learning experience makes this program appropriate for gifted and talented students in kindergarten to grade 3. However, the teacher should read the instructions and some of the textual feedback to the non-readers.

This program may also be used with learning disabled students in grades 2-4. However, the teacher must monitor the program to make sure that the student understands the method of interaction since it is not consistent from one game to another. Some of the levels may be too challenging but the easier levels should be able to reinforce the skills, although at a lower level than for enrichment students.

THE WHATSIT CORPORATION (1983)

Subject	Mathematics, Problem Solving, Business Education
Topic	Use of mathematics in a business simulation of starting and running a one product business
Users	Gifted grades 8-10, IOP grades 10-12
Author	Waterford (Michigan) School District
Publisher	Sunburst Communications Box 3240, Station F Scarborough, Ontario, M1W 9Z9 Telephone: 1-800-247-6756
Cost	$87.00 (1988)
Components	1 disk with back up, teacher's guide (54p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, monitor
Other Formats	IBM PC, Commodore 64, TRS-80 III/IV Colour

PROGRAM SUMMARY

This program is designed to provide practice in calculating, estimating, record keeping, working with equations and multiple variables, and reading graphs; to teach students to use mathematics as an analytical tool in making decisions and finding solutions; to provide simulated experience in managing a business; and to develop problem solving skills such as planning ahead, working in two timeframes, and evaluating and modifying a strategy.

This program is a simulation in which a student runs a small, one product business for up to six months. The student may conduct market surveys, buy a franchise, hire outside consultants, take out a loan, etc. Weekly and monthly decisions involve hiring and laying off staff, ordering inventory, setting prices, paying off loans, hiring accountants, and buying advertising services. A monthly statement of income and expenses provides students with information on which to base their next month's decisions.

Students must provide classroom instruction in business and marketing terminology before using this program. A grade 7 reading level is required. The simulation uses an effective method of inquiry requiring students to apply high level thinking skills. The level of abstract in this program requires good attention span. However, data can be saved and continued at a future date. Students lacking in self-evaluation skills will likely need teacher assistance in analyzing their performance. If this program is used in a mathematics classroom, it offers an interesting approach to basic calculations (addition, subtraction, multiplication, and division) and some formula applications such as interest calculations.

The teacher documentation is excellent and provides instructions, activity master sheets and transparency masters which are essential to use prior to program operation.

SPECIAL EDUCATION APPLICATION

This program is appropriate for gifted and talented students in grades 8-10 especially for those who have an interest in the business environment. It stimulates thinking skills, develops problem solving strategies and reinforces basic mathematical skills in a business content. This simulation involves analytical decision-making skills, calculating, estimating, record keeping, equation solving, and graphing. Excellent support material is provided but there must be considerable teacher preparation before the program is used.

The program has more limited use with IOP students in grades 10-12 since they will need considerable instruction in the concepts of business and marketing before they attempt the program. It will be advantageous to go through the simulation as a group in order gain an understanding of key variables which must be considered in a business. The main advantage of using this program with IOP students is that it encourages a group approach. Decisions could then be made by drawing upon the strengths of individual members which is not unlike real life situations. The students will need to write their results on the worksheets provided in the manual and analyze the relationships to determine what decisions ought to be made. The teacher should also indicate that there are other important variables which the program did not include such as overhead, taxes, insurance, marketing and distributing expenses, etc. This program would have questionable value with IOP students if it is used strictly on an individual basis.

WORD ATTACK! (1983)

Subject	Language Arts
Topic	Teaching new words, their meanings and usage
Users	Gifted grades 3-8, LD, EMH
Author	Janice Davidson and Richard Eckert
Publisher	Davidson and Associates 3135 Kashiwa Street Torrance, CA 90505 Telephone: (213) 534-4070
Cost	$49.95 U.S. (1987)
Components	1 program disk, 1 data disk, teacher's guide (44p)
System Requirements	Apple II+/IIe/IIc/IIgs, 48k, 1 disk drive, monitor, printer (optional), joystick (optional)
Other Formats	IBM PC, Commodore 64/128, Atari

PROGRAM SUMMARY

This program is designed to assist students to learn new words, their meanings and usage. It covers vocabulary building, word meanings, usage of words as nouns, verbs, adjectives and sentence completion. A data disk with a selection of word files at nine different levels of difficulty is provided. An editor which allows the teacher to create data disks with word files is provided within the program.

The program contains four task areas:

1. WORD DISPLAY - A list of twenty-five words is displayed, each with its synonym or definition and a sentence illustrating its usage. The student can repeat this activity until the words and their meanings are learned.
2. MULTIPLE CHOICE QUIZ - There are two formats in the quiz. One format displays the word and asks the student to select the meaning while the other format displays the meaning and asks the student to select the correct word. At the end of the quiz the score is displayed along with the words which were missed. The student may repeat the test if desired.
3. SENTENCE COMPLETION - The meaning of a word is displayed at the top of the screen and the student is required to type the correct missing word into the sentence displayed below it. He/she must recall, use and spell the word correctly. A help function is available to assist selecting the correct word from four options.
4. WORD ATTACK - This arcade type game is timed. The object is to attach to word whose meaning appears at the bottom of the screen by using the arrow key and Z keys or a joystick. Three speeds are available in this game.

SPECIAL EDUCATION APPLICATION

The editor function is a great asset in this program. It allows the teacher to customize the program to accommodate special needs students. Teachers can create word files including their own vocabulary, definitions and sentences. The scope of the content can be simplified or expanded depending on the needs of the students. The content can be expanded to include scientific terms, historical dates, foreign languages, etc., for gifted and talented users from grades 3-8. The program can also be adapted for use with learning disabled, educable mentally handicapped and even trainable mentally handicapped students provided the teacher makes use of the editor function to input appropriate content. Although this function is a very valuable part of the program, it must be noted that teacher time is required to achieve this. If a teacher chooses not to customize the program, the original program can be used with learning disabled students with a reading level of grade 4.

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